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AMERICA'S NEED OF SEA POWER

U.S. ADOPTS POLICY OF REALISM

PHILIPPINE INDEPENDENCE AND ASIATIC MONROEISM

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America's Need of Sea Power

*By HERBERT COREY * in "Current History"*

The American attitude at the naval conference in 1935 will be determined by American naval necessities. World problems are again being viewed realistically, as they were in the days of Grover Cleveland and Theodore Roosevelt. Idealism and altruism have been tried and —to be blunt about it—they have not worked. The administration is sincerely desirous of obtaining a reduction in world armament. It is, so far as one can see, backed by majority opinion. But reduction will not be solely at the cost of the United States in 1935. America will not again offer other nations rewards for good behavior. It is not that Americans have turned cynical; they have merely learned to recognize facts.

The preliminary naval conversations in London have already made it abundantly clear that the 1935 conference will center upon the Pacific problem, although there are other problems to share the attention of the treaty powers. But until the troubled situation in the Far East is cleared up little can be done. Japan has declared that the word "ratio" is offensive to her, and has insisted that the other powers grant her an equality in defense "in principle." Her reading of this theory appears to be that she shall be granted a sufficient weight of defensive ships to give her the absolute and unchallenged control of Far Eastern waters. At the same time Great Britain and the United States are asked to cut down their present allotment of heavy battleships, both in weight and in numbers. If that proposal were to be accepted it would amount to precisely this: Japan could do as she pleased in Asia and no other power would be in a position even to question her.

That this will be vigorously opposed by the United States is certain. Great Britain presumably will at least in part support the stand of the United States. This position may be traced back to the Washington conference of 1921, though its genesis is of still earlier date.

Of the two accomplishments of the Washington conference, the lesser in importance has had most of the world's attention and the other has been almost forgotten. The striking achievement, brilliant in conception and execution, was the limitation of naval armaments which Secretary of State Hughes generously offered on behalf of America and which was accepted in modified form by the other powers represented at the conference. When this agreement was made a flame of enthusiasm swept across the world. The feet of the nations had, it seemed, been at last set on a path that drew onward and upward. Navies were confidently expected to dwindle into nothingness as time went on. To certain influential thinkers universal peace seemed to be just around the corner because, according to them wars take place when men are armed. They forgot that men are armed because war may come.

Actually, reduction in armament was made possible at the Washington conference only because the powers concerned had decided to jettison the Anglo-Japanese alliance. No one who was in close touch with the situation in 1921 can forget the days of tense excitement while this question was being debated. The conference had been called and the delegates with their aides were already in Washington. But a delay followed that was at first inexplicable. Then, little by little, from behind the screen of silence maintained by the delegates, it leaked out that unless the Anglo-Japanese alliance were ended the conference would come to nothing.

Great Britain and Japan had for their own purposes made this alliance. But during the World War Japan revealed the policy she has consistently followed toward China and attempted to raid that shapeless and headless country under the banner of her Twenty-one Demands. The Western powers compelled her to withdraw from this position. Although Japan had been of some value to the Allies during the war in protecting commerce on the Eastern seas, when the war ended Great Britain was content to withdraw from the alliance. In urging so strongly that the alliance be voided, the United States was actuated both by motives of sentiment and a natural and laudable desire to increase its commerce. We wanted the doors of China kept open.

Japan consented—and until she did the conference was at a standstill—to end her alliance with Great Britain. But she exacted her full pound of flesh. For a two-power pact Japan obtained a four-power pact. Instead of being the partner of one great nation she became the associate of Great Britain, France and the United States. From second rank she rose to first at a bound. But that was not all. She consented to the 5 : 5 : 3 ratio on the assumption, assented to freely by all, that it would give her perfect defense, her geographic position being what it is. The Japanese delegates in addition demanded that the fortification of the Pacific islands be forbidden by the powers holding them as of former right or by mandate. They insisted that Great Britain should stop the fortification of her Hongkong base and that the United States should not further improve the bases at Guam and in the Philippines. Without these bases and without other protection on the islands it would be impossible for the United States to hold the Philippines against a determined attack.

These demands were granted because the Western powers believed that they were thereby making war in the Far East impossible. The sea distances are so great that the absence of effective bases must discourage any prospective belligerent. Britain and America further understood, quite definitely, that the value of this concession to Japan's security was not to be increased by the unlimited building of auxiliary vessels by Japan. But this understanding is now challenged by Captain Gumpei Sekine in "November Current History" when he says that the Japanese naval authorities consented to the proposals "with the understanding that we might carry on unlimited building of auxiliary vessels."

In order to obtain for Japan the inestimable gift of perfect security and what amounts to the grant of a free hand in China the United States gave up the naval dominance of the world. At that time the American Navy was becoming the most powerful the world had ever seen. The British Navy was second in point of strength, although burdened by some vessels which were approaching the age of obsolescence. Though the Japanese Navy was new and powerful, it was less than 3 to 5 of ours, but Japan had become so conscious that the Western nations were looking with suspicion upon her adventures in China that she was building at a rate she could not afford financially to maintain for long.

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* Mr. Corey, a war correspondent throughout the World War and now president of the Overseas Writers in Washington, is well qualified to discuss American naval policy by reason of his long and intimate study of the subject. He covered the Washington Arms Conference and has since been in a position to acquire information that enables him to write on naval affairs in an authoritative manner.

There was no naval race between Japan and the United States at this time, as has so often been said, even if both countries were overbuilding, and though friction was growing, there was no apparent danger of war between them.

The 5 : 5 : 3 ratio and the consequent naval holiday, which were not possible until the Anglo-Japanese alliance had been ended, reflected the world-wide weariness of war and the restiveness of taxpayers at the thought of continuing to shoulder burdens in peace which they had borne with more or less resignation during the war. The 5 : 5 : 3 ratio was adopted solely because it was a rough-and-ready device that avoided the intricacies of each nation's needs and corresponded with each nation's naval strength at the time. In each country a number of ships considered as surplus by the statesmen of the day were lopped off the estimates, so that in relative strength the three nations were left precisely as they were before.

In the decade that followed the United States refused to build up to treaty strength. There was a persistent belief, spread by important, extremely vocal and very well financed societies of pacifists, that if America did not maintain her navy at treaty strength the other nations would presently be overcome by shame and would likewise stop building. Needless to say, no other nation followed the American example. In 1926 President Coolidge tried to rouse their consciences and asked that they meet in Europe to agree upon a formula for further disarmament. The results of that conference were so disheartening that in 1928 Mr. Coolidge announced a program for shipbuilding, and followed it with a note in which he commented bitterly on the unfairness with which America's disarmament suggestions had been received.

During this period Americans did not seem to realize that failure to keep the American navy built up to treaty strength had dislocated the disarmament agreement of 1921, for which the world gave the United States almost exclusive credit. Theodore Roosevelt's advice had been forgotten. We were walking softly but we had thrown away our big stick. No one listened to us in international conference.

In 1933 a change took place in the American attitude, as represented by the administration and by popular opinion. Americans again became conscious of sea power. This is seen in many ways. The talk in public places is almost invariably resentful of the weakness into which the United States has fallen on the seas. When President Roosevelt asked for generous support for his program to rebuild the navy, it was granted by Congress with what amounted to enthusiasm. Representative Vinson, author of the bill which provided for the first long forward step toward a stronger navy, declared on the floor of the House that if the other nations would not disarm with us we would build with them : " Our past negligence is not to be taken as a prophecy. We will match them ship for ship and gun for gun."

Congress, always in close contact with the voters back home, would not have maintained this new enthusiasm for the American navy without certainty of voter support. In 1933 and 1934 laws were enacted and orders issued that will bring the navy to its full treaty strength by the end of 1942. Until then it must lag sadly behind the British and the Japanese. Great Britain will have built to treaty strength at approximately the end of the treaty period. Japan now is practically built to treaty strength.

Americans have noted the candid and well argued refusal of Great Britain to reduce her naval protection for reasons involving the national safety. Every one of those reasons may be applied to the position of the United States, and to the demand of Japan that she be given full naval equality on pain of voiding the existing treaty. Americans may hope that the world may be spared another war, and to be prepared if war comes, but they know now that a neutral nation is merely the handmaiden of the strongest belligerent if she is not prepared to defend her rights upon the sea. Three times America has been forced into war to protect her right to trade at will—once with France, once with Great Britain and once with Germany. The two other major maritime nations are likewise determined to make sure of safety. Japan has lost no opportunity to declare that if she is not granted precisely the formula she thinks essential, she will withdraw from the conference. On the authority of Hector C. Bywater, writing in " October Current History," " Great Britain may be expected to drive a hard bargain."

The conference of 1935 very likely, then will bear only a remote resemblance to that of 1921. The end desired at each conference remains the same. Each of the treaty nations hopes to acquire some assurance of enduring safety. The conditions under which that end will be sought have been altered. The United States is no longer under the spell of an evangelistic fervor. It has realized that statesmanship may not safely be governed by sentiment. Its delegates will not attend the conference bearing gifts but to make certain of American security. At once it becomes evident that the conditions facing the three maritime nations are quite dissimilar.

Great Britain must retain command of the European waters. This is possible only with a strong fleet based on her home ports. At the same time her widespread trade routes must be protected. Her long string of fortified bases—Gibraltar, Malta, Egypt, Aden, Bombay, Colombo, Hongkong, Sydney, Auckland, Esquimalt, the West Indies and Bermuda, not to speak of the $50,000,000 base now being rushed to completion at Singapore—enable her to do this with a minimum of sea power. But America can protect her merchant vessels in time of war only with ships able to keep the sea for a long period and steam great distances.

It is this fact that prompts the suspicion that Mr. Bywater was indulging in gentle humor when he wrote that " the United States, if called on to state her reasons for demanding a navy second to none, would have to appeal to academic rather than to concrete principles." Washington, he declared, can afford to view the development of sea power by other nations " with Olympian calm and detachment." He admits that Americans would properly resent a foreign attempt to suggest, if not dictate, " the limits to which the United States Navy should be developed," but he argues that we have no need of a navy " second to none " except for considerations of prestige.

An examination of the American case does not support this assumption. There will be no attempt to return to that position of apparent dominance in world naval affairs that the United States held in 1921. That position was voluntarily abandoned. We were able to obtain for other nations and ourselves an arrangement which promised to give to each the safety it desired and which would not give any nation preponderant strength if the other nations built up to treaty limits simply because we had something to pay for their consent. To-day the American navy is definitely in the weakest position. Great Britain is in fact stronger on the seas. Japan is sheltered in an impregnable fortress.

The United States Navy is a national institution, not a political influence or a political factor. One after another the various Secretaries of the Navy have formally stated its purpose in terms almost identical with the words used by Secretary of the Navy Swanson in 1933 : " The fundamental naval policy of the United States is to maintain the navy in sufficient strength to support the national policies and commerce and to guard the continental and overseas possessions of the United States."

National policies are invariably economic. The effort to earn must be accompanied by an effort to retain what has been earned. For the United States, as for Great Britain, the navy is the first line of defense. If we look at a map of the world it becomes clear that the United States is, except as to Canada and Mexico, virtually an island. Our relations with all other countries, friendly or hostile as they may be, depend on sea power. Our navy is as important to us as the British Navy is to Great Britain. Without it our foreign commerce and our merchant fleet must be injured and perhaps destroyed in time of war. Injury of that kind is sometimes irreparable, as was demonstrated during our Civil War.

A national policy that cannot be successfully maintained must be abandoned if challenged. An inquiry into the permanent policies of the United States which the navy may be called on to uphold seems advisable. First in point of age is that of political isolation. The United States often co-operates with other nations for a given purpose but never enters into a treaty of alliance. This may on occasion call for a naval force strong enough to protect American liberty of action. The Monroe Doctrine is the immediate junior to the doctrine of isolation. It has twice been challenged. In 1864 a strong American navy and army prevented Maximilian I from seizing Mexico and in 1902 the navy compelled Germany to withdraw from its position in regard to Venezuela.

Conditions in the Caribbean area naturally come under the general head of the Monroe Doctrine. If the Panama Canal were closed in war American naval forces might be divided. Although the army is entrusted with the defense of the canal, the navy must be responsible for the provisioning of the fortress. It is true that the United States abandoned its position as a defender of neutral rights during the World War; yet this did not take place until we were a party to the conflict. If there should be another war in which American sympathies were not so strongly engaged as in 1917, the nation would maintain its traditional position. The doctrine of the Open Door in China is in abeyance just now, but no one knows what might happen in the future. The present restrictions upon immigration may at some time be challenged because of the temptation offered by the wealth of the United States. If the bars were let down the story of Hawaii would undoubtedly be repeated, and California would become a Japanese coast.

That the retention of American possessions in the near Pacific is a permanent policy will not be questioned. To this is added the perplexing problem posed by the Philippine Islands. At the end of a ten-year period the Philippines may accept independence. In any case the United States is left in an unenviable position. By the Washington treaty the bases of Corregidor and Guam may not be further fortified. They could not withstand attack by a strong force for long. Without such bases the United States would be at a very serious disadvantage in Far Eastern waters. If the Philippines elect to become independent America has reserved the right to retain these bases. This amounts to a resignation of commercial profit and a retention of responsibility.

European commentators have taken the position that the two long sea coasts of the United States could not be successfully blockaded in the event of war. Nevertheless, it would be serious if a fleet of superior strength were to hold position on either coast. The fertile inland country would furnish food in abundance, but it would be at least theoretically possible for fast war vessels and bombing aircraft to raid the coastal cities unless we had a naval force able to keep the coasts free. The narrow seas of Britain seemed to be comparatively easy to defend. Yet German raiders were able to get through the cordon frequently enough to cause annoyance, even if the British were neither frightened nor disheartened.

Moreover, five years of depression have taught Americans that a considerable share of their comfort and prosperity has depended on foreign trade. Congress has continued to appropriate money to aid the American merchant marine in spite of frequently voiced criticism of the manner in which the United States Shipping Board has conducted its affairs. The generous Congressional grants for the building up of the navy were based in great part of the need of protecting the merchant fleet in time of war. There is no disposition on the part of the American public to depend on the friendly offices of another nation for this protection. Secretary of Agriculture Wallace sent up a trial balloon when he suggested that the United States might gain through the payment of the war debts if the ocean-carrying trade were turned over to other nations. The hostile reception given that idea was extremely significant.

It is ridiculous to suggest that the United States and Great Britain will ever again engage in war. The two countries have occasional tiffs but on the whole understand each other fairly well. But it does not follow that if we were at war with another nation Great Britain would be so altruistic as to protect our merchantmen. Her own national interests would quite properly come first. Unless we can defend our merchant ships the commerce they carry must very largely go to the ships of other nations able to defend their carriers. British statesmen want a defense at sea suited to Britain's peculiarly fortunate position. The American naval problem differs in pattern but not in magnitude from that which Britain faces. In some respects the two countries are following a curious parallel.

An agreement of a sort was reached by Great Britain, the United States and Japan in 1930 because of the similar purposes of the British and American governments. A Labor government in London was, to quote Mr. Bywater, "anxious for party purposes to achieve a spectacular coup in the realm of high politics." The Hoover administration may have been actuated by much the same motives as well as by a conviction that a reduction in armaments would eventually ensure world peace. This left Japan in a position to get her own way. Her ratio was increased from 5 : 3 to 5 : $3\frac{1}{2}$, and by that much her position in the Far East was strengthened.

Precisely as in this country official opinion and popular sentiment seem to be in agreement that the United States will not again attempt to secure world safety by giving its own weakness as a bond, so the dominant political parties in Great Britain have declared themselves in opposition to further disarmament. The British naval budget has been increased, 2,000 have been added to the fleet personnel and it has been decided to build heavier cruisers to match the 10,000 ton cruisers which the United States insists are essential to the safety of its commerce. The British base at Singapore is indispensable to the protection of Britain's Asiatic interests in the event of a war in the Far East. The base at Hongkong is, according to press reports, being improved so far as is possible within the limits of the Washington treaty. Mr. Bywater has suggested that if America resigns the Philippines our Asiatic squadron would be withdrawn. It is only necessary to point out that this squadron was permanently stationed in the Far East long before we took possession of the Philippines.

At the 1935 conference American eyes will be turned toward the Far East. Our relations with Japan have not been altogether pleasing. In an attempt to maintain the provisions of the Four-Power Pact, which was later supplanted by the Nine-Power Treaty, both of them designed to protect China and maintain peace in the Far East, the United States protested against recent Japanese action in Manchuria and China. No support was offered by the other signatories to these treaties, and Japan had her way. The United States was allowed to bell the Japanese cat all alone. The British Government ultimately issued a statement to the general effect that the Japanese explanations had been satisfactory.

Even before Japan was assigned the former German islands in the Pacific under mandate she was virtually immune to successful attack. Her mainland is in reality one great fortress, lying behind a series of highly defended bases which parallel the coast of Asia for 2,600 miles. They reach from her northernmost outpost in the Kurile Islands to Formosa. This Gibraltar of the East lies within 250 miles of the Philippines, on which the United States has a very imperfectly defensible base. If it were possible for an enemy force to penetrate Japan's island screen and set foot on the mainland it would only be to meet one of the two most formidable armies in the world.

Japan now owns two-thirds of the Sea of Japan. The narrow straits of Tsushima, in which Admiral Togo destroyed the Russian fleet in 1904, provides the only southern entrance. It is commanded by long-range batteries on the Korean shore. The three narrow ways which give entrance from the north—the Tartar Straits, the La Perouse Straits, and the Tsugaru Straits—could easily be closed by mine fields and fortifications. As long as the Sea of Japan is in effect a protected waterway to the Asiatic hinterland Japan is in no danger of a shortage of food or raw materials. To the south lie 1,400 islands that would have to be cleared one by one if an enemy fleet should attempt to penetrate to the Japanese coast. Each would provide a base from which bombing aircraft and submarines might operate. Through her bases at Formosa, in the Pescadores and in the Nansei Islands, Japan has control of the Yellow Sea.

Captain Sekine, writing in "Current History for November," says: "Our (the Japanese) treaty navy, even if it were built up to its 60 per cent allotment, could be but 36 per cent effective in actual combat against an opposing naval force of 100 per cent" in obedience to the law of N square. He ignores the fact that all naval battles have been fought close to shore. Therefore, if the United States fleet were to attempt aggressive operations on the Japanese coast the Japanese could use all the shore-based aircraft as well as the smaller vessels of types which Japan has been building actively in the past few years. Captain Sekine likewise ignores the fact that sea power is built of combatant ships, plus merchant marine, plus defended bases. In the Far East Japan is superior in these factors to the United States. She has already built to treaty strength, whereas the United States will not reach that position before 1942. Captain Sekine in his article considered only combatant naval strength and omitted to mention the other factors of the situation.

The United States, moreover, is compelled to consider the national attitude of the Japanese. They are essentially a military people, rightfully proud of their traditions, and able to point to their successes of the past half century as an evidence of the wisdom of their course. Their territories have been added to by the sword, with the result that other nations are forced to scrutinize closely every move made by Japan.

It is difficult, therefore, to accept Captain Sekine's argument that what has seemed aggression to us has been in each case an act of legitimate self-defense. Nor can his insistence that the fact that the Philippines may gain their independence "is a purely domestic problem of the United States and has nothing to do with naval disarmament" be easily reconciled with the Japanese position at the Washington Conference in 1921. Japan was then willing to accept the 5 : 3 ratio on condition that there be no further fortifications in the Far East. Now she insists that these restrictions be retained, but declines to consider them as a *quid pro quo* for the maintenance of the present treaties. Japan would eat her cake and have it, too.

The nearest American naval base is Hawaii, 3,400 miles from Manila. If there were war with Japan and the United States battleship fleet were ordered to the East, it would arrive at Manila, an almost undefended port, with greatly depleted fuel supplies. The strong Japanese battle fleet, supplemented by land forces, might quite possibly succeed in reducing Corregidor long before the American fleet could arrive. It follows as a matter of course that the American fleet must consist of the larger types of battleship, with abundant fuel capacity, in order that they might be able to keep the sea. If the Japanese demand that ships of this class, which she has defined as "offensive" weapons, were to be accepted as such by the 1935 conference, the United States would be helpless in the Far East. An alternative might be the raising of the present prohibition against the fortified bases, but this is unlikely both because the United States would not care to do anything that might be construed as provocative and because of the opposition that Japan would certainly offer.

Perhaps the most striking statement in Captain Sekine's discussion of Japan's naval needs is that, "even granting that the facts justify America's attitude toward her markets in the East," it must be remembered that markets only exist where there is peace and that it "would be impossible for any country other than Japan" to keep the peace in the Orient. The implications are inescapable. Japan may not be opposed to the Open Door, but she proposes to keep her hand on the latch. To this frankly exposed determination America will assuredly be opposed at the 1935 conference. Such a situation undoubtedly has within it the seeds of trouble.

Before the Pacific position can be considered at the 1935 conference, it may be that the European enigma must first be solved. France and Italy are showing signs of engaging in a naval race of their own. Germany has already produced a "pocket battleship" that is obviously feared by the other European powers. Great Britain, in order to protect her own position, may perhaps have to insist upon a strengthening of her forces, and the United States would then in turn be forced to add to its line of battle. In any event the American position is in effect what it was in 1921. The goal of American effort will be so to distribute sea power that no single nation may again regard the sea as its private dominion and to reduce the burden on the taxpayer. In the background will be the conviction that sea power is more safely entrusted to nations that live by trade and therefore desire to promote peace, and that have no huge standing armies. Precisely what technical means will be utilized to this end have not been disclosed, as this is being written. It is difficult to obtain parity by means of a formula. The international position has changed since the time of the Washington treaty, when it was possible to obtain an agreement by what Mr. Bywater well describes as rule-of-thumb methods. Now the situation as among the powers is more intricate.

To the best of American ability, every chance was given to good faith and fair play in 1921 for the sake of world peace. Little came of these sincere efforts. The hope that other nations would reduce their armaments if the United States led the way proved illusive. As American sea strength waned American influence in the councils of the nations grew weaker. It may be assumed that an agreement of some sort will be reached in 1935. A nation would be ill-advised to take steps that might result in another naval race. Nevertheless the situation to-day, as compared with that in 1921, obviously contains far more threatening elements and greater possibilities of danger.

U.S. Adopts Policy of Realism

By WALTER LIPPMANN in the "New York Herald Tribune"

AMONG events that are supposed to be in the long run inevitable it has been the fashion to place a war between Japan and the United States high up on the list. The feeling that such a war is predestined has existed for a generation. It arises in the acknowledged fact that Japan is a young empire in the process of expansion, and it has been supposed that at some point in Japan's advance there would be a collision and a war of annihilation like that between Rome and Carthage in ancient times, between England and Spain in the sixteenth century, between Britain and Germany in the great war.

Always and everywhere it has been assumed that historic destiny had cast the United States for the part of the leading opponent of the Japanese advance, and the foreign policies of all the governments concerned with the Pacific, including our own, have been based on this supposedly self-evident idea. Thus, it was President Wilson who stood out against the Twenty-one Demands. It was Secretary Hughes who undertook to fix the ratio for the Japanese navy. It was Secretary Stimson who led the opposition to the conquest of Manchuria. It was Secretary Hull who found himself protesting against the Japanese oil monopoly in Manchuria. And in the early phase of the recent naval negotiations in London, it was the Americans who held the center of the stage as the supposedly lone opponents of an equal navy for Japan.

Tokyo-Washington Relations

This basic assumption, that the Far East question is predominantly a conflict between Japan and America, has become so thoroughly accepted that no one is supposed to examine it. The result has been to concentrate upon the relations between Tokyo and Washington all the suspicion and fear which are produced by Japan's expansion.

Within the last few months, however, there has become noticeable in American official policy a disposition to re-examine this idea and then to challenge it. It marks a development of the very highest importance.

To appreciate it one must look below the surface of the recent naval negotiations carried on by Mr. Norman H. Davis. The outward facts are that the Japanese asked for naval equality based upon the abolition of naval ships with offensive power at long range. This demand was refused and the Japanese have formally denounced the treaty limiting naval armaments. Their action has not brought them one bit nearer to naval equality. For the United States and Great Britain are richer than Japan and can always outbuild Japan. Without a treaty we can therefore maintain a five-to-three ratio anyway and we could, if we wished, increase our relative strength. Japan, without a treaty, cannot be sure that she can have a fleet which is relatively as large as the one she has now.

For a treaty of limitation limits the stronger power and strengthens the weaker. The Japanese naval authorities will gradually learn to appreciate the truth that it was not Japan but the United States which surrendered potential naval strength by accepting the treaty. Japan is undoubtedly a stronger naval power to-day than she would have been without the Washington treaty. For she has built up near to the limits of her resources and we have not. To give Japan a better ratio by treaty would have been to make Japan stronger by agreement than she could hope to become without an agreement.

Up to this point the whole thing has the look of being just another chapter in American resistance to the creation of a Japanese empire in Asia and the western Pacific. But along with a firm refusal to strengthen Japan, Mr. Davis took a line in London, which is something quite new in American Far Eastern diplomacy.

(Continued on page 50)

Philippine Independence and Asiatic Monroeism

By PIO DURAN, Professor of Law, College of Law, The University of The Philippines

Just before his death, Dr. Sun Yat-sen in a speech delivered in Kobe, explaining how Asiatic peoples have been oppressed by the white races, said :

"We ought to study Pan-Asianism in order to solve the problem of how the oppressed Asiatic nations can be enabled to oppose the strength of Europe. A militaristic state oppresses other nations as well as its own people. Our Pan-Asianism aims at conquering injustice on the basis of 'Wang Tao.' It opposes militarism in an attempt to emancipate all the masses of all nations equally. You Japanese have already adopted Western militaristic civilization as an addition to your essential oriental civilization of Wang Tao. You are now in a position to choose between two ways, either to become the watch-dog of Western militarism or the bulwark of the oriental way of life based on 'Wang Tao'."

That advice coming from the lips of China's illustrious and venerable statesman than whom no greater visionary and lover of his country has awakened her teeming millions and electrified them to action, breathes an appeal for the Oriental philosophy of virtue and justice embodied in that term "Wang Tao," against the sordid and brutal terrorism of Western materialism. It furnishes a subject for thought for those in the Orient who, forgetting that they are of the flesh and blood of the East, would cast aside racial pride, disown the very nature and character of their being and those of their ancestors, for the temporary superficial advantages of a material nature which the Occident may confer upon them and in exchange for a few hypocritical overtures of disinterestedness would advocate Occidentalizing the East, and would prefer the white man to his Oriental brother, knowing full well that the former treats the colored peoples with scorn and contempt.

Centuries of constant and continued Occidental oppression has had the disastrous effect of converting the weaklings of the East into a group of racial renegades who claim to be more Occidentalized than the most rabid Occidentals. They form the instrument, the medium, by means of which the white man seeks to undermine and eventually destroy the whole fabric of Oriental Culture. They are out of place in an Eastern civilization of high spirituality. They are dispised even in the land of their white protectors. They thrive upon the adulatory protestations of respect with which the white man in the East covers his sinister designs for commercial aggrandizement. Blinded by the lustre of gold which links them with Western materialism in the East, they no longer perceive the sturdy character of their race, the self-abnegating spirit of their people which constituted the foundation of the vast Oriental Empires of pre-Western era of domination. Rather, they shamelessly predict the economic, social and cultural ruination of their country upon the disappearance of Western support. They care not for the daily insults heaped upon their own people and race for their racial dignity has long been stifled by their eagerness to distinguish themselves as the Occidentalized Orientals. Those meaningful words of Dr. Sun Yat-sen were undoubtedly uttered with a view to affecting the racial repatriation of these unfortunate apostates of Orientalism.

Draws Comparisons

Perhaps in no other place in the Orient do these racial renegades abound in alarming numbers as in the Philippines. They see their country with the eyes of the West and proudly distinguish it as the only Oriental country that has imbibed Western culture and civilization.

But at what expense has this been done ? Do the Filipinos to-day possess anything which they may proudly proclaim as their own ? What do our Oriental neighbors think of us ? Are we perturbed by the thought that Occidental domination has converted our country into a misfit in the Orient ? China can boast to-day of a culture and a civilization purely her own. The Chinese people upon whom many of our countrymen in common with the white man look with disdain, ignorant though they appear to be according to Western standards, have admirably clung to the noble traditions of their ancestors.

Japan has learned the materialism of the West and has utilized it successfully against the West on more than one occasion, but she has not discarded her religion, her language, and other institutions which are essentially Oriental and her own. The teeming millions of India who have groaned under the British yoke for countless years, divided though they may be, as the British people wish them to be to perpetuate British domination, have their own culture of which they are immensely proud. Years of the most abject poverty, of the most cruel oppression under foreign control have not succeeded in shaking the loyalty of the Hindus to the institutions which they have inherited from their forbears. Siam to the South, has conserved her own habits, mannerisms and ways of living in preference to those of the Occident. Even the sixty million Malay brothers in Borneo, Sumatra and other Islands of the East Indies though for centuries subjected to Western control, have retained the essential features of the civilization handed down to them from the Empire days of Shri-Bisayas.

Travellers who visit the Orient see evidence of Oriental culture everywhere, whether it be on the slopes of Japan's snow-covered mountains, or on the scorching sands of the Gobi desert, or on the dizzy heights of India's Himalayas or on the typhoon-beaten shores of the East Indies. But when they reach the Philippines, they find here an adulterated Orientalism which fits neither with the setting in the East, nor with the background of the West. This deplorable state of affairs is due to the superimposition by force of contact and oppression of Western civilization on a background essentially and eminently Oriental. The blame cannot be laid upon the masses of the people but rather upon the apostates of Orientalism who have aligned themselves with the governing West in an effort to emasculate a portion of the Oriental race.

Time for Action

Now that the Philippines is about to regain its lost freedom, after centuries of ceaseless struggles, it behooves every Filipino to start a "back to the Orient" movement. The veneer of Western civilization which has grown in thickness in direct proportion to its enforced application, through centuries of helpless submission should be scraped off, in order to disclose and bring to light the lustre of the old Oriental culture which still remains and for all time to come will remain the fundamental controlling influence in the lives of all peoples of the Far East.

How best may this task be accomplished ? Undoubtedly, a rapproachment between the Philippines and her Oriental neighbors, through the instrumentality of a regional understanding like the Monroe Doctrine, will offer one of the best solutions to that question.

Regional understandings among civilized nations within specified areas have been recognized as effective means of eliminating friction among them, facilitating their union, and securing peace and tranquility. The *ex parte* warnings of President Monroe fully a century ago against intervention by European powers in affairs of the nations of the Western hemisphere have now acquired the international status of a binding norm of action on the part of the United States and have proven to be a most efficacious instrument in warding off European intervention in the American countries. Since its incipiency, the cause of Pan-Americanism has been vigorously advocated in every country of both North and South America. Since then, it has been the driving force behind the American nations in their efforts to preserve the American continents for themselves.

As an instrument of peace, it has worked out marvels in the Western hemisphere. It has proven that regional understandings conceived in the possibilities of peace and order are the best means of preventing the outbreak of conflict. On the other hand in those regions of the world where no such understandings exist and where different independent nations consider themselves of equal strength although such be not the fact, as for instance in Europe, the possibilities of war are greater. The multiplication of nationalities each trying to compete with the other in the art of war and destruction inevitably leads to conflict. If a Monroe Doctrine should be proclaimed in Europe and another one in the Orient, the result will be the division of the world into three regional spheres, namely, the Western continent, Europe and Asia. With the United States in the Western hemisphere, France and/or England in Europe and Japan in the Far East as the nations responsible for the maintenance of peace and order in these three regions, a race for armaments in land, air and sea would be avoided and the possibilities of friction developing among the different nations in those regions or among the three regions themselves will be greatly minimized.

History and common-sense tell us that the less number of nationalities there are the better peace is preserved because there are less number of possible combatants. I do not mean by this statement that the countries composing these different regions will necessarily have to renounce their independent existence. The Latin American countries have not lost their independence. It is true that the United States in the name of the Monroe Doctrine or as an expression or interpretation thereof has unduly interfered, from the standpoint of international law, in the affairs of many Latin American countries. But these abuses compared with the benefits which the doctrine has brought about are infinitesimal and in almost all instances they may be justified upon the principle of international law that an independent nation is bound to make good use of her independent status.

Sanction of League Covenant

Lastly, the efficacy and propriety of such regional understandings as the Monroe Doctrine, have received the sanction of the covenant of the League of Nations which states in Article 21 that:

> "Nothing in this covenant shall be deemed to affect the validity of international engagements, such as treaties of arbitration or regional understandings like the Monroe Doctrine, for seeking the maintenance of peace."

But would a policy that aims to keep Asia for the Asiatics and exclude further Occidental interference work out advantageously in the Orient? Not a few distinguished persons have commended the idea. In a recent editorial of *Le Figaro,* a powerful French newspaper, the following views were expressed:

> "We must not be dragged into a conflict in the Far East. If we participate in such a conflict, we will enter only to be burned. If the League of Nations had not stuck its fingers into the Sino-Japanese issue, events would have been far different and Japan would perhaps not have left the League. We must not waste the value of this experience.
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> "The problems of Asia and the problems of Europe cannot be handled in the same manner. Those who know the most about Asia are the Asiatics themselves. One should realize that it is the wiser policy to leave matters to be settled through negotiations between the Asiatics and not to attempt to participate in their affairs."

This is but an expression of the fundamental reason behind the recently announced "hands-off China" policy of the Japanese Empire dictated by the necessity of preventing European nations through the League of Nations and the United States through her munition factories and plutocrats from unduly interfering in the internal administration of the affairs of the Chinese Republic and unwarrantedly encouraging armed conflicts among the Chinese warlords by selling them munitions of war, thus not only endangering the lives of the peaceful inhabitants of China but also menacing the peace of the Orient.

The late President Theodore Roosevelt favored the establishment of Monroeism in the Far East. Viscount Kentaro Kaneko in an article entitled "Japanese Monroe Doctrine and Manchuria" published in *Contemporary Japan* describes how President Theodore Roosevelt advocated the proclamation of a Japanese Monroe Doctrine in the Orient at the time the peace negotiations at Portsmouth were being conducted subsequent to the termination of the Russo-Japanese war in 1905. The pertinent portion of the article is as follows:

> "'Japan is the only nation in Asia, said the President, 'which understands the principles and methods of Western civilization. She has proved that she can assimilate Western Civilization, yet not break up her own heritage. All the Asiatic nations are now faced with the urgent necessity of adjusting themselves to the present age. Japan should be their natural leader in that process, and their protector during the transition stage, much as the United States assumed the leadership of the American continent many years ago, and by means of the Monroe Doctrine, preserved the Latin American nations from European interference, while they were maturing their independence. If President Monroe had never enunciated the doctrine which bears his name, the growth of the independent South American republics would have been interfered with by influences foreign to this continent. The future policy of Japan towards Asiatic countries should be similar to that of the United States towards their neighbors on the American continent. A Japanese Monroe Doctrine in Asia will remove the temptation to European encroachment, and Japan will be recognized as the leader of the Asiatic nations, and her power will form the shield behind which they can reorganize their national system.'
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> "When I asked the President how far he thought this 'Japanese Monroe Doctrine' should extent, he replied that the sphere of the 'Japanese Monroe Doctrine' should include the whole continent of Asia—east of Suez Canal as far as west of Kamchatka—except India, Annam, the Philippines, Hongkong and other European and American colonies. At the same time Japan would observe the American policy of the 'Open Door and Equal Opportunity' in China.
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> "'If Japan will proclaim such an Asiatic Monroe Doctrine after the Peace of Portsmouth,' continued the President, 'I will support her with all my power, either during my Presidency or after its expiration.'"

In an article published in the *Kansas City Star* of January 19, 1919, entitled "The League of Nations," President Roosevelt reiterated his stand in the following words:

> "The American people do not intend to give up the Monroe Doctrine. Let civilized Europe and Asia introduce some kind of police system in the weak and disorderly countries at their threshold."

A great lover of fair treatment and fair play, Theodore Roosevelt was not willing to claim for his country what his country would not willingly concede to others. That is why he pleaded for a Japanese Monroe Doctrine in the Far East.

Under what Leadership?

But granting that the suggestion of the late President Roosevelt would ensure the maintenance of peace in the Orient and protect the weak nations therein from foreign interference, under whose leadership may this suggestion be transmuted into reality? Japan! That is the only answer to that question. Her military and naval prowess to-day supported by a patriotic ardor such as no nation has ever before displayed is making the Occident tremble on her knees.

She has given evidence in abundance of her desire to unite the peoples of Asia under her leadership in some workable arrangement such as a Monroe Doctrine for the East. Her withdrawal from the League of Nations is a burning protest against an attempt on the part of the West to interfere in the international relations between two of the most important countries of the Far East. Her demand for naval parity is prompted by a desire to have a navy strong enough to repel hostile enemies who might dare invade the waters of the Far East. The interest she has shown in the acquisition by her ally Manchukuo of the North Manchuria Railway, betrays an unmistakable insistence on eliminating one of the potential sources of friction between Russia, Manchukuo and Japan. Her readiness and willingness to guarantee the territorial and administrative integrity of an independent Philippines is in line with the desire of all Oriental nations gradually to free the Orient of all traces of Western domination. The statement recently made by the Japanese Ambassador, Mr. H. Saito at Washington to the effect that Japan would be willing to go to war against Great Britain and the United States if forced to do so in an effort to preserve the peace of the Orient in the manner in which she thinks most convenient to the peoples therein, is proof conclusive of the determination of the Japanese Empire to become responsible for the maintenance of peace in this part of the world.

Thus we see that the contemporary acts of the Japanese Empire have practically laid the foundation for the establishment of a Monroe Doctrine for the Far East. Only one other element—the unstinted support of the other countries in the East is needed to insure its successful operation. Now that our country finds herself at the threshold of freedom, we should prepare ourselves to buttress Japanese efforts to conserve the Asian continent and its nearby islands for the Asiatics.

In that manner alone may an independent Philippine Republic expect to last for any considerable length of time. It should be noted that President Roosevelt in advocating a Japanese Monroe Doctrine excepted therefrom the Philippine Islands and other territories of the Far East under the sovereignty of Western countries. This exception was undoubtedly prompted by the fact that the colonizing powers which owned territories in the Far East were possessed with such military prowess that they believed they could defend their colonies. But the status of the Philippines very shortly will be changed from that of a colony to that of a free nation. American influence which has been on the ascendancy since the beginning of the twentieth century has already reached its zenith and with the hauling down of the American flag within a decade pursuant to the terms of the Tydings-McDuffie Law, it will continuously decline. After the passing of a generation or two, its last vestiges will have been completely eradicated. In proportion as that influence wanes the resurgence of true Filipino culture, will manifest itself in increasing magnitude.

See Advantages

But what advantages will a Monroe Doctrine in the Orient under Japan's leadership accrue to an independent Philippines? In the first place it will guarantee the territorial integrity of the country. Much as we may desire to believe that our country would be able to take care of herself without aid of any foreign power, it is none the less true that the realities of the situation compel us to admit that the protecting hand of a powerful nation like Japan is not to be rejected.

In a former article entitled "Japan, Philippines Safeguard," I have endeavored to demonstrate that help from other foreign countries, in any form will not be forthcoming and effective. The United States shackled by constitutional limitations, cannot even guarantee the territorial integrity of an independent Philippine State against foreign encroachments. Her unswerving policy of assuming responsibility commensurate with exercised authority does not admit of a supposition that she would risk war to defend the Philippine Islands. Many of her responsible officials have so assured the whole world on more than one occasion. The last outburst of American feelings in this respect is General Butler's remarks before the Veterans of Foreign Wars made at Louisville, Kentucky, on October 3 of last year. The Associated Press reports that General Butler urges "that the United States navy be second to none but that it (should) never fight more than 200 miles from the country's coast line. He is reported to have shouted "to hell with sending troops to foreign countries to make them safe for democracy."

Lastly, no slight consideration should be given to the fact that no single country in the world can to-day cope successfully in the Far East, with the strength and might of the Japanese army and navy. To quote Hector C. Bywater in his recent article entitled "The Coming Struggle for Sea Power" (October issue of *Current History* and November issue of *The Far Eastern Review*):

> "About Japan's naval policy there is nothing obscure or ambiguous. Its object is so to consolidate her strategic position as to render armed foreign interference in Eastern Asia physically impossible. **That goal is now in sight, if it has not already been attained."** * * * * *
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> "If the reported intention of the United States to evacuate the Philippines and withdraw its naval forces to Hawaii is actually carried out, the principal cause of armament rivalry with Japan will disappear, for the two fleets would then be so far apart as to render battle contact all but impossible. Such a development would materially weaken the Japanese case for a still larger navy, **since she would then be left in unchallenged command of the Western Pacific. As every student of strategy is well aware, Japan's mastery of her own waters is already absolute.** * * * * * *"

It is a matter of common knowledge that a certain belief has developed in American quarters that the readiness and willingness of the United States to set the Philippine Islands free is attributable in no small measure to the fact that the defense of the Philippine Islands constitutes the weakest spot in the American armor. On this matter, Mr. Bywater in the same article referred to above says: "The Philippines are a dangerous liability so long as they remain under the American flag, but after they become independent and the Asiatic Squadron is withdrawn, as now seems likely, the United States will have an invulnerable naval defense." A sudden and decisive defeat of American forces in the Philippines by a strong Oriental country, will cause the now over-inflated bubble of the white man's prestige and superiority to explode and perchance kindle the fire of revolution in those other regions of the Far East now under Western domination. Once independent, the only practical recourse open to us, is to accept and support Japanese leadership in the Orient.

Points Other Reasons

Laying aside the demands of national security, there are other potent reasons why the Philippines should favor Monroeism in this part of the earth.

Geographical and cultural considerations favor the banding together of the nations of the Far East. Civilization in the Philippines as well as in Japan are grounded upon the teachings of the sages of old like Confucious and Lao Tze and upon the principles of Buddhism. Before the coming of the Spaniards, the Philippines formed a part of the great Empires which were built by the combined forces of the Buddhists and the Chinese. The Boro Budur in Kadu residence, Java, and the magnificent Sivaitic sanctuary raised by Suryavarman II in the early years of the twelfth century in Angkor Vat, even to-day, stand out in the East as a beacon light of hope towards which millions of Malays turn their faces for encouragement in the darkest hours of their struggle against Occidental domination. Their symmetric beauty, their appalling grandeur have not yet been equalled either in conception or execution by even the most active and fertile artistic imagination of the West. Their splendor and magnificence which have spanned thirteen hundred of the most agitated years of human civilization, proclaim the lasting qualities of Malay enterprise and culture. With that background, it is hardly to be expected that the groundwork of Filipino civilization has been totally eclipsed by the influence of four hundred and fifty years of Occidental domination.

Geographically, the Philippines constitute the vortex around which gravitate all the diverse forces of Oriental influence. Once part of the mainland of Asia where China and India house nearly one half of the total population of the world, the Philippines form a part of a string of islands which skirts the shores of the Asian continent extending from Hokkaido in the north down to Sumatra on the north shores of Australia. Whether the Filipinos like it or not nature has thus decreed that their country's life shall be inextricably linked with those of the other countries of the Far East. To go against this inevitable mandate of Nature is to invite racial suicide and to imperil the peace and tranquility of the entire Far East.

The Factor of Racial Pride

Then again, there is the question of racial pride which cannot be divorced from a thorough discussion of Monroeism in the Far East. No nation in the Orient has escaped the indignities and the humiliations attendant upon the assumption by the white man of an arrogant air of superiority over colored peoples of the East. The discriminatory clauses in immigration and marriage laws passed by various countries of the West are symbolic of the treatment and consideration they accord the Orientals

At the Versailles conference held for the purpose of discussing the provisions of the covenant of the League of Nations, the proposition of the Japanese delegates to insert in the Covenant a clause guaranteeing racial equality among all nations was unanimously opposed and consequently rejected by the representatives of all the Occidental powers. Considering the fact that this occurred immediately after the colored peoples of the world had fought hand in hand with the nations of the Occident during the darkest hours of their struggle against what they termed a ruthless militarism, the rejection of a proposal providing for racial equality in no less a document than the covenant of the League of Nations which was being organized for the purpose of outlawing war forever, constituted a death-blow to whatever measure of mutual co-operation may have been established by the years of camaraderie and fraternal association, the colored peoples had with the white races in the battlefields of France and in the waters of the Far East. That attitude shows in no uncertain terms a refusal on the part of the Westeners to co-operate with the colored peoples on a parity basis in the solution of the problems of the world. To try to work with them hand in hand at this late date is to sanction and perpetuate the insulting attitude which they have always shown in the past.

The insistence of the Anglo-Saxon countries in opposing Japanese demands for naval parity and to saddle her with the provisions of the Washington treaty which were forced upon Japan in 1921 by the brow-beating tactics of the United States and Great Britain, is not only a refusal to concede autonomy to bear arms to Japan, but also an insult to the entire Oriental peoples. We, the Filipinos in our helplessness and humiliation offer our disorganized and disunited moral support to the efforts of the Japanese Empire to secure for the entire Orient the place which it rightly deserves in international councils. If all the Oriental countries were united under the protecting assurance of a Monroe Doctrine the influence which such a union would wield could counteract the concerted efforts of the Occident to deny to Japan, and consequently to the Orient, autonomy to bear arms. These are questions which deserve the consideration of the Filipino people not from the narrow standpoint of nationalism because their effects transcend the physical boundaries of nations but from the standpoint of the dignity of the Oriental races.

The wounds inflicted by offenses of a racial nature hurt the soul. As such they never heal. For a nation's soul is its faith. And so long as the Orientals have faith in themselves, so long will the soul of the Orient live.

If, for no other reason, therefore, than to terminate the unjustified and arrogant fiction of the "white man's burden," the Filipinos should as a matter of racial pride, accept Japanese leadership in the Orient. If all the Asiatic countries recognize the paramount and preferential position of Japan in the Far East as the country responsible for the maintenance of peace therein in the same way that the independent nations of the American continents have looked to the United States as their guardian angel, then the white man's sword will no longer be brandished with impunity before the patient eyes of Asia, and the teeming millions in the Asiatic continent who are now burdened with the weight of Occidental domination will cast off the illusion of their inferiority, into which they had been driven for centuries by the white man's cunning and rapacity, and awake themselves to the fact that the East belongs to them much in the same manner as the West belongs to the Westerners.

Finds Flaws in Criticisms

Of course those who are opposed to this idea point to Japan as an aggressive and ambitious military power which might make use of such a doctrine as a means of acquiring other areas in the Pacific and in the Asiatic continent. They point to the case of Formosa and Korea as eloquent examples of Japan's territorial ambitions.

The underlying causes which led to the acquisition of Formosa and Korea should be studied before jumping at conclusions which though apparently justified to one who has only a superficial knowledge of the matter, in truth lack any foundation in fact. During the last years of the 19th century the Russian paw had already been extended way beyond Manchuria into Korea. Although the latter was an independent kingdom under the suzerainty of China it was powerless to stem the tide of Russian intrigue and administrative encroachments. China herself did not have the means with which to check Russian advance.

Basil Matthews says in his recent book entitled "World Tides in the Far East," "As can be seen from a glance at the map however, Korea in the hands of a powerful, ambitious Western Empire aiming at a port in the Pacific Ocean, is a dagger menacing the heart of Japan. So Japan fought China in 1894-1895 not so much through hatred of China as to keep Russia from ruling in Korea."

Harold M. Vinacke in his book "A History of the Far East in Modern Times," describes the Japanese fear of Russian control of Korea in this manner: "Russian expansion to the Pacific had already brought her into contact with Japan in such a way as to awaken the Japanese government to the danger of allowing Russia to establish herself as close to the Japanese islands as Korea. In 1884 Russia had revealed her interest in that country by undertaking a reform of the Korean army. The request for the use of Port Lazareff indicated the Russian objective. Thus in order to forestall Russia it was necessary for Japan to establish herself securely in the Peninsula." The Sino-Japanese War as a result of which Japan acquired Formosa was therefore a matter of life and death to the Japanese Empire.

The Record in Manchuria

Ten years later, Japan was again called to halt Russian advance in Manchuria which was fast converting that country into an adjunct of the Tsar's already extensive domains. In the Russo-Japanese war, two hundred thousand Japanese lives were lost on the plains of Manchuria and one billion yen were spent to carry it out successfully. Thus Manchuria occupies a special place in the hearts of the Japanese people. Its verdant valleys in summer, its snow-capped mountains in winter and its meandering streams are mute witnesses of the horrible sacrifices of blood and life which the Japanese nation had to bear in a last desperate attempt of the East to stem the ever-rising tide of Western Imperialism. Even at this late date, I shudder with fear as I contemplate what the possible results to the Orient would have been had Russian arms emerged victorious in that war. I tremble with fear at the thought of Russia annexing the three northern provinces of Kirin, Fengtien and Heilungkiang comprising Manchuria where she had already obtained a foothold, because it would have disturbed the balance of power in the East and would have induced the other European countries to start a movement of converting their recently mapped out spheres of influence in China, into integral portions of their respective Empires.

No Open Door Policy could then have avoided the partition of China, for Russia would never have consented to release her hold on territory she had conquered at the expense of so great a proportion of her wealth and at the sacrifice of the lives of her citizens. I tremble with fear at the thought of Korea being reduced to a vassal state of Russia, for it would have meant the nullification of Japanese power and prestige in the Orient and would have left Siam far to the South as the only fully independent Oriental nation. And lastly I tremble at the thought of the partition of China and of the elimination of Japanese influence in the Orient, for they would have imported the repetition in Asia of the colonial exploits of the Occident in Africa. Instead of having to-day a constitutional convention charged with the task of drafting a fundamental law for the future Philippine Republic, we would be going to our caves and taverns and there secretly and discreetly and at the risk of our lives whisper in scarcely audible terms the hope of national independence and dream of its glorious possibilities. Thus it will be seen that the triumph of Japanese arms in 1905 was a victory of the entire Far East for which the Filipinos and other Orientals owe a debt of gratitude to Japan.

Contrast the motives of Japan in these two wars with those of the Occidental nations. The United States and the other Occidental powers have not only acquired and conquered territories contiguous to their original boundaries but have over-stretched themselves and have reached the Far East in such conquests. What is more, they have done so not for the purpose of relieving an over-crowded country like Japan is and has always been or to remove an existing menace against the life of their inhabitants, but simply to give greater impulse to an economic development not essentially material for their existence but indispensable in satiating imperialistic greed for more peoples to exploit.

A Course of Necessity

The case of Japan is one of desperate necessity. Her population which is increasing at the rate of one million people a year now numbers seventy million in Japan proper without including Korea and Formosa. To accommodate seventy million people in a territory as big as the State of California alone is a gigantic problem which would tax the best brains of any country. To feed seventy million people out of the resources of such a limited area of land is a feat which no human being has been or will be able to perform. Japan therefore has abundant reasons to look for new territories into which her surplus population may be sent. She could easily make these as an excuse for the conquest of new territories contiguous to her boundaries, as Occidental nations have heretofore done for reasons which are trivial compared to the necessities which confront the Japanese nation. But Japan, as peace-loving as she is and has always been, has not made use of her military power for that purpose.

The wars in which Japan has participated were not the result of any undue provocation of the Japanese Empire for the purpose of picking up a quarrel to justify the acquisition of these territories; and yet Japan is pictured as a nation ready to jump at the first opportunity presented to herself, to conquer by force fresh areas of territory.

As I have shown above, such an accusation if it must be made, should be directed not against Japan but against the Occidental powers. What Occidental power has returned territory which it had acquired in the East at the cost of human carnage? When the United States through its Congress in 1916 promised in unequivocal terms its intention to grant the Philippines her independence, it was publicized throughout the whole world that an act of international magnanimity unparalleled in the history of civilized nations was about to be performed by the United States. The world little knows that the Japanese Empire on two occasions previous to the fulfilment of that pledge had not only made a promise but actually restored territory which it had acquired at the expense of the life and blood of the nation. I refer to the retrocession of the Kwantung Peninsula which was ceded to Japan by virtue of the Sino-Japanese Treaty of April 17, 1895. The Japanese imperial rescript of May 10, 1895, states that the return of the Kwantung Peninsula was dictated by a desire to promote peace, and avoid "imperilling the situation and retarding the restoration of peace." It then concludes as follows: "Under these circumstances we do not consider that the honor and dignity of the Empire will be compromised by resorting to magnanimous measures and by taking into consideration the general situation of affairs."

Again in 1921 the Japanese government and people following the demands of peace returned to China the territory of Kiaochow which had been conquered from Germany during the World War. These two instances show beyond the shadow of doubt not only a desire to sacrifice national interests for the promotion of peace in the Far East, but also a denial of the charge that Japan's ambition for territorial expansion constitutes a menace to the weak countries of the Orient.

Contrasts in National Policy

The case of Manchukuo is the most recent proof that the Japanese Empire does not covet additional territory. The annexation of Manchuria to the Japanese Empire as a result of the September 18, 1931 incident could have been done easily by Japan, and considering the perturbed condition of affairs in the Occident, no power on earth could have prevented the Japanese from doing that. But Japan instead of following Occidental precedents, preferred not to annex an inch of Manchurian territory but instead recognized the aspiration to independence of thirty millions Manchus. For a much less cause than those underlying the September 18, 1931 incident in Manchuria, Occidental nations have acquired territories in the Far East.

For the murder of a couple of missionaries Germany acquired Kiaochow; for the sinking of a battleship the United States acquired the Philippines; for the refusal of the Chinese to purchase British opium, Great Britain acquired Hongkong; for no reason whatsoever Russia forced China to give her a lease on the Peninsula of Kwantung. Countless other incidents may be cited to show that in the history of civilized nations the Occidentals are past masters in the acquisition of territories and the victims have always been the countries and peoples of the Far East. Now that the Japanese people have proven that in many respects they are superior to the white people, the latter would make the other peoples of the Orient believe that the real menace to the Orient is Japan. The fear which they have of the economic might and military prowess of Japan they would instil in our hearts in order that by bringing about a disunion in the Far East, Japanese strength may be undermined. Let not our country be deceived by sinister propaganda calculated to divide the Orient against itself.

The Pacific is fast becoming the center of world affairs. The London Naval Conference, the denunciation of the Washington Treaty by Japan are grave international questions which have divided the civilized world into two opposing camps, i.e., the Orient and the Occident. As each day passes the cleavage between the East and the West grows deeper and wider. Although it is beyond human power to prognosticate what the result of this schism will be to the structure of human civilization, yet two things are certain: firstly, if armed conflict shall develop between the East and the West the Pacific Ocean will be the arena of combat; secondly, whatever result the actual division may bring about, it will affect tremendously the existence and the security of all Asiatic nations and races.

Within the next decade of our semi-sovereign status we will have to decide whether to cast our lot with our masters of the West or with our brothers of the East. We cannot adopt a temporizing, hesitant or neutral attitude, because the conflict is not only in our place but is about ourselves and the rest of the peoples of the Far East.

Situation Presents Choice

What should be our answer to Japan's "Hands Off" warning to the Western nations? If we are in favor of establishing an Asiatic Monroe Doctrine we should support her in that stand. If we wish to perpetuate Western domination in the East then we should denounce her.

Certain questions of a realistic and racial nature should be borne in mind in arriving at a proper answer to that question. Foremost among these, is the fact that Japan to-day is the master of the Pacific, and when she insistently demands naval parity with Great Britain and the United States, and fearlessly denounces the Washington Treaty she is conscious of her mastery, and is ready to bear the consequences of a war with the Occident.

Reflecting the sentiment of the Japanese nation in this regard is a recent editorial which appeared in the *Osaka Mainichi* on October 28, 1934, as follows:

> "After all, what concerns America most (Britain may not differ much) appears to be the holding of the ratio of our country's armament below that of America. Should America loudly herald a 'concession,' it might mean that she would favor Japan with a little larger ratio. But whether or not Japan will build warcraft to the full limit of the treaty stipulation, it would be intolerable for our nation to-day to see any discriminatory grade assigned to this country. We are convinced that we have reached the national stage where we may demand international justice.
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> "Our nation believes that the time has come when the past submission should be liquidated—the submission which incidentally resulted in looking on at the trampling of international justice and a failure on our part (though it might have been an unavoidable failure). Therefore, even if there may be room for concession in minor details, we firmly believe it impossible to give ground an inch in regard to the fundamental principles that our delegates have proposed, at the preliminaries.
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> "The answer to the proposal for the abolition of ratio is either Yes or No. It is not subject to deliberation, as if it were a business transaction. If, therefore, our basic principles meet flat rejection, there is no necessity of convoking the plenary conference. We do not wish free competition in warcraft building, but if our national demand fails to evoke an agreeable response, whatever follows cannot be helped. We are aware of the presence of many circumstances indicating that warcraft competition will not be apprehensive as in the old days, but we will not take that up here. Let it suffice here to point out the American irrationality of insisting on an antiquated yardstick in spite of the radical changes that have been made in the world to-day."

No less emphatic is the interpretation of Japanese demands advanced by Captain Gumpei Sekiné of the Japanese Imperial Navy in his article entitled "Japan's Naval Claims" (Contemporary Japan, Vol. II, No. 3) as follows:

> "It is assumed abroad, and sometimes even here, that an armament race would ruin Japan, strategically or economically, or both. This is not true. In the first place the

> Japanese Government would embark upon such a competition with the support of the whole nation. Anybody who doubts that has only to consider the public reaction to the May 15 trials, during which indignation at the way in which Japanese naval security has been sacrificed in the past, was generally accepted as a justification for the actions of the young patriots. The nation, feeling that the action of the Government was entirely jusified, and that the armament race had been forced upon them by others, would be ready as one man to make the necessary sacrifices. The sort of patriotism that consists of a readiness to lay down one's life for one's country is plentiful enough. That which implies a willingness to lay down one's money for the same cause is more rare in the capitalist world. Japan has not been sufficiently influenced by capitalist ideology to make that distinction. Life and property are equally at the service of the State if the need arises."

China, whose severe denunciation of Japan before the League of Nations has brought unfortunate results to the cause of the colored races in the Far East, is now beginning to be convinced that while the Occidentals may be depended upon to foster national animosities and jealousies between the countries of the East, they will not sacrifice an iota of unselfish effort to uphold their gratuitous decisions on controversial issues involving Oriental countries.

In an article entitled "Realities in the Far East" William Nunn, M.P. (*The Asiatic Review* and *Far Eastern Review*) states :

> "The rulers at Nanking are, in the main, realists. Aided by the conviction that the West no longer counts, they recognize the strength of Japan's position and the weakness of their own ; and if they could be assured that their national pride would not be humiliated the best of them would be prepared to come to agreement with Japan. * * * * * Japan stands as the great Eastern barrier against Bolshevism, and as the potential savior of Asia. Such a thought makes the menace of her perfectly natural commercial expansion a comparatively small matter. The question of real world-wide importance, the question upon which the fate of civilization may well hang, is how to bring the two great Eastern races together so that they may work hand in hand."

Problem of the Philippines

It is now high time for us, Filipinos, to be convinced that in the years to come it is not American and European influence emanating from the other side of the globe ten thousand and more miles away that is destined to play an important rôle in the development of our national independent life ; it is the conduct of and the contact with our neighbors of the Orient that will ultimately be the decisive factor in shaping the future national policies of the Philippine Islands. Her geographical proximity with the other Oriental countries should convince even the most confirmed skeptic that her national life will be irresistibly linked with theirs and that with them the Philippines will rise or fall in the impending conflict of the Pacific Ocean. The time is now ripe for us to join hands with them in the formulation of a Monroe Doctrine for the Orient. Cultural and geographical considerations suggest it. Our national safety calls for it. Our racial pride demands it. To adopt another course would lay our shores open to attack by our brothers of the Orient and what is more would justify the charge of our being traitors to the high cause of the colored races in the East.

U.S. Adopts Policy of Realism

(Continued from page 44)

In effect, he served notice that we do not intend to play the part of Japan's leading and solitary opponent in Asia because it is not in our national interest to play that part. This is the most momentous event that has happened in our Far Eastern relations since the time of John Hay.

New American Position

The new American position is based upon a prosaic and candid reconsideration of the facts. They are, in brief as follows: Our interests in the Far East are about one-sixth as great as those of Britain. Among all the foreign nations interested in China we have about one-sixteenth of the total investments. The American attitude toward the defense of economic interests in Asiatic waters may be measured by the decision to withdraw from the Philippines, and our willingness to leave undefended our line of communications to the Far East. Among the Chinese areas threatened by Japan there is, first, Manchuria, where American investments are relatively unimportant. Then there is Shanghai, where the British interest is more than seven times as great as ours. Then there is the rest of China, including Hongkong, where the British interest is more than four times as great as ours. Outside of China, the territories which are in the long run, most threatened by Japanese expansion, because they contain so many resources necessary to Japanese imperialism, are the Dutch East Indies, and they are primarily the concern of the Netherlands, and in the last analysis of Great Britain.

An objective survey is bound to lead to the conclusion that we have no interests in the Far East which require us to play the part of the solitary antagonist of Japanese imperialism. The interests threatened by Japan are only in a small part our interests. We are merely one nation in a group of Western nations who are concerned. Our interest is much smaller than Great Britain's is smaller than Russia's, is only slightly greater than that of France, not counting Indo-China, is much less vital than that of the Netherlands.

That being the situation, the treatment of Japanese imperialism is an international problem and it is not our business to make ourselves the sole protector of Western interests. This is not a policy of scuttle. It is a policy of realism in which the United States would decline to take the sole responsibility and bear the whole onus of dealing with Japanese expansion.

As this policy becomes clearer and its significance is appreciated in London, Paris, Tokyo and Washington, the Far Eastern question will take a new form which is likely to be much less dangerously entangling for the United States.

The "Adriatic" Sold

The Transatlantic liner *Adriatic*, of 24,679 tons gross, built in 1906 for the White Star Line, has been sold to Japanese shipbreakers for £65,000. The liner is now lying at Liverpool.

The *Adriatic*, a twin-screw four-masted steamer, was built by Harland and Wolff, Limited. She has been a very popular ship in the White Star service between Liverpool and New York, and like the *Baltic*, of 23,884 tons, which was sold for breaking up some time ago, had a reputation for steadiness. Both ships did fine work during the War. Other vessels at one time employed in the service were the *Celtic* and *Cedric*. The *Adriatic* was recently transferred by the Oceanic Steam Navigation Company (White Star Line) to Cunard White Star, Limited, on the formation of new enterprise in conjunction with the Cunard Steam Ship Company, Limited.

There was known to be competition for the breaking up of the *Adriatic*, and evidently the prices offered by British firms were exceeded by the Japanese buyers. The present sale raises the amount of high-class liner tonnage disposed of last week for breaking up to the exceptionally large total of 92,000. The vessels, with their years of construction, are as follows :—

Name	*Gross Tonnage*	*Year of Construction*
Minnewaska	21,716	1923
Minnetonka ..	21,998	1924
France	23,769	1912
Adriatic	24,679	1906
Total tonnage ..	92,162	

The first two British liners were sold for breaking up in this country. The *France*, which was owned by the Compagnie Générale Trans-atlantique, was sold to a firm at Dunkerque.—*London Times*.

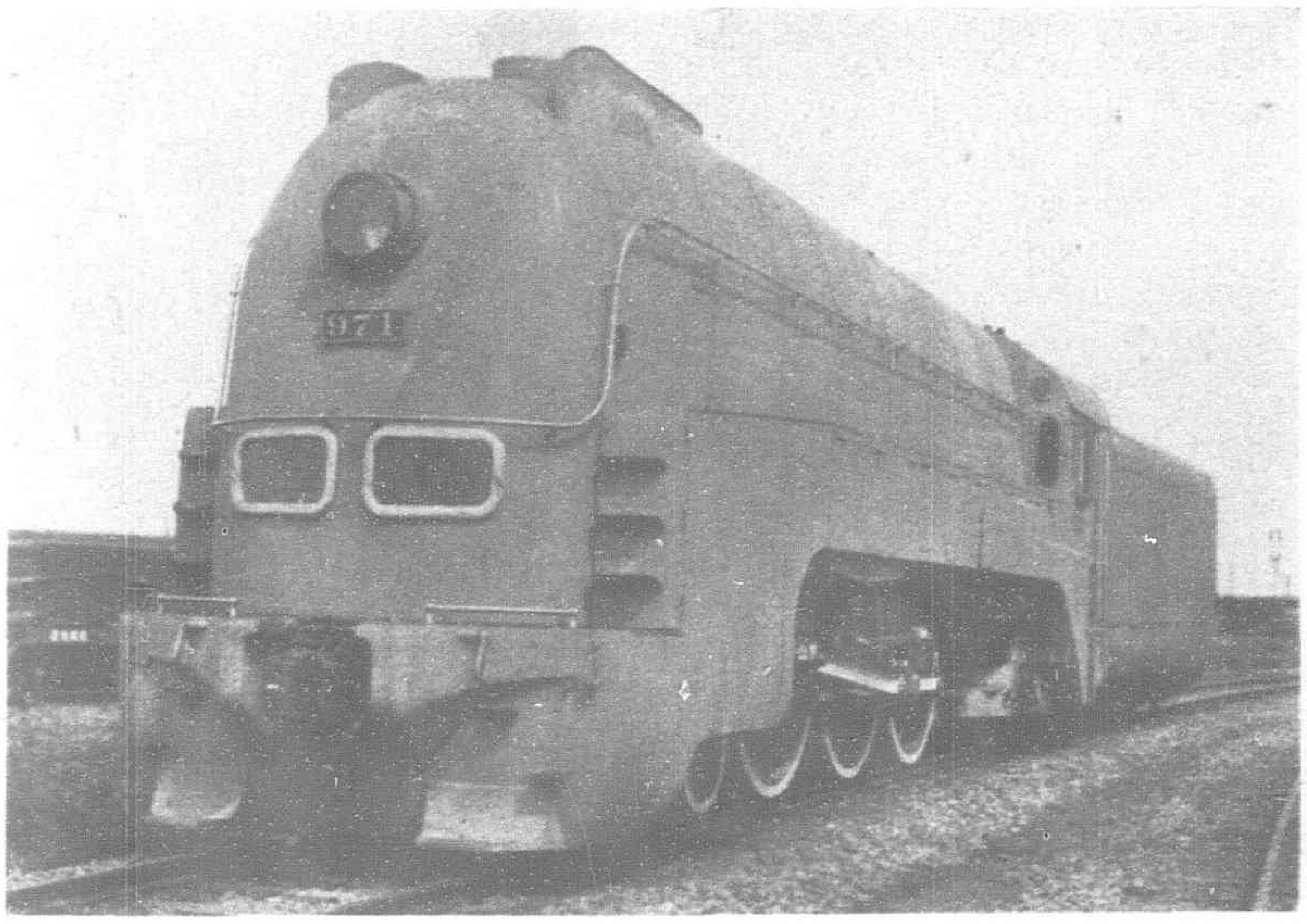
The New Train "Asia" Goes Into Service

Stream-Lined Super Express of the South Manchuria Railway Company Does 140 km Per Hour

In order to keep pace with the rapid progress now being made in Manchukuo and to meet the exigencies of the so-called age of "high speed," the South Manchuria Railway Company has recently sent out to the world a new stream-lined super express train named "Asia," the initial run taking place on November 1 last year.

True to the much advertised publicity and worthy of its imposing name of "Asia," the new train presents a very smart and stately appearance what with the complete stream-lining from head to tail, and the smart color-combination of deep indigo of the locomotive and light olive of the coaches with a white streak running throughout the length of the whole train on each side.

It is especially noteworthy that both the design and the construction of this "wonder" train have been achieved single-handedly by the Railway Department of the South Manchuria Railway Company, that the materials used are mostly either native or Japanese products, and finally that the total cost of construction of the train which consists of one locomotive and six cars, is only Japanese Y.500,000, considerably cheaper than the new three-car express train of similar type operated by the Union Pacific Railway in the United States, whose cost of construction is said to be 200,000 dollars.

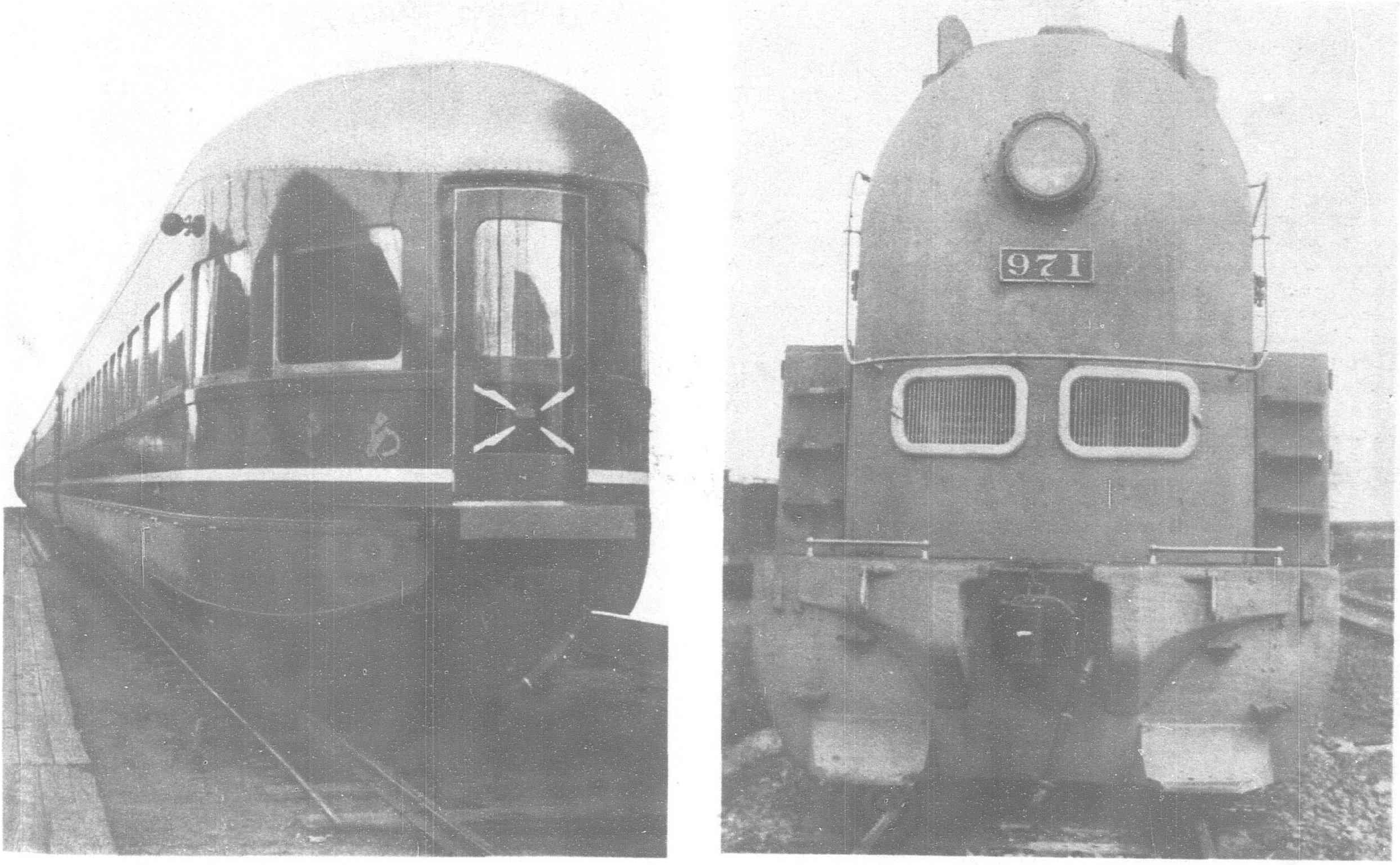


Another view of the locomotive of "Asia"

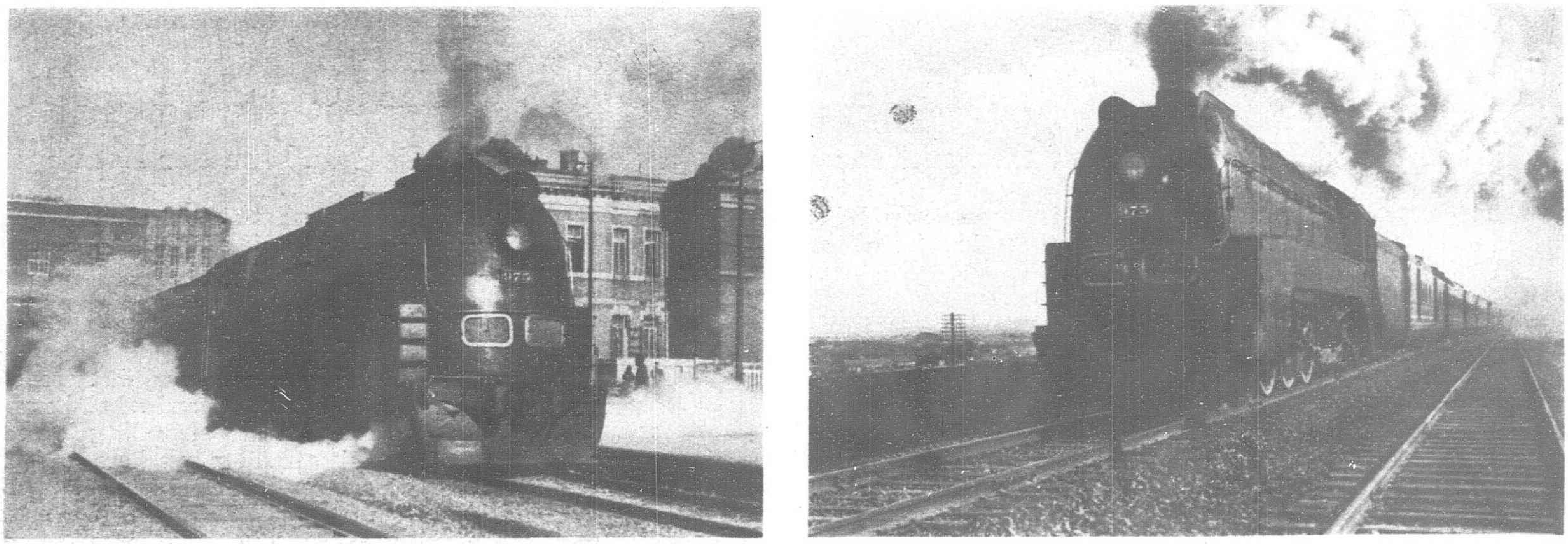
Speed and Composition of "Asia"

The "Asia" express at present negotiates the distance of 701.4 km. between Dairen and Hsinking in eight and a half hours, the average travelling speed being 82.5 km. per hour, which, however, will be speeded up a great deal more in the near future (the maximum speed which can be attained is 140 km. per hour) after the road-bed, curvings and grades will have been all adjusted to the speedier operation.

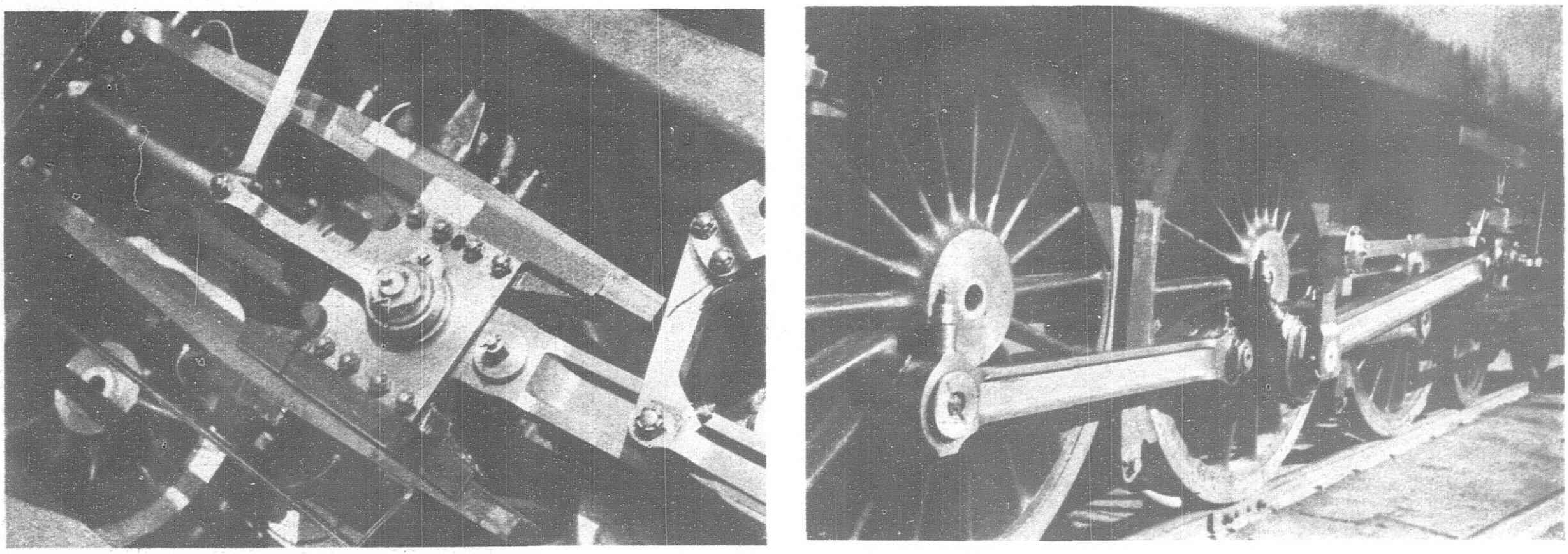
The train is composed, beside the locomotive, of six cars, to wit: one baggage and mail car, two third-class passenger cars, one dining car, one second-class passenger car and one first-class passenger and observation car in the respective order. For emergency, either a second-class or first-class passenger car can be added between the last two cars.



Observation Car and Locomotive of the South Manchuria Railway Company's Stream-lined Super Express Train "Asia"



Two pictures showing the stream-lined "Asia" in motion



Close-ups of working parts of Locomotive

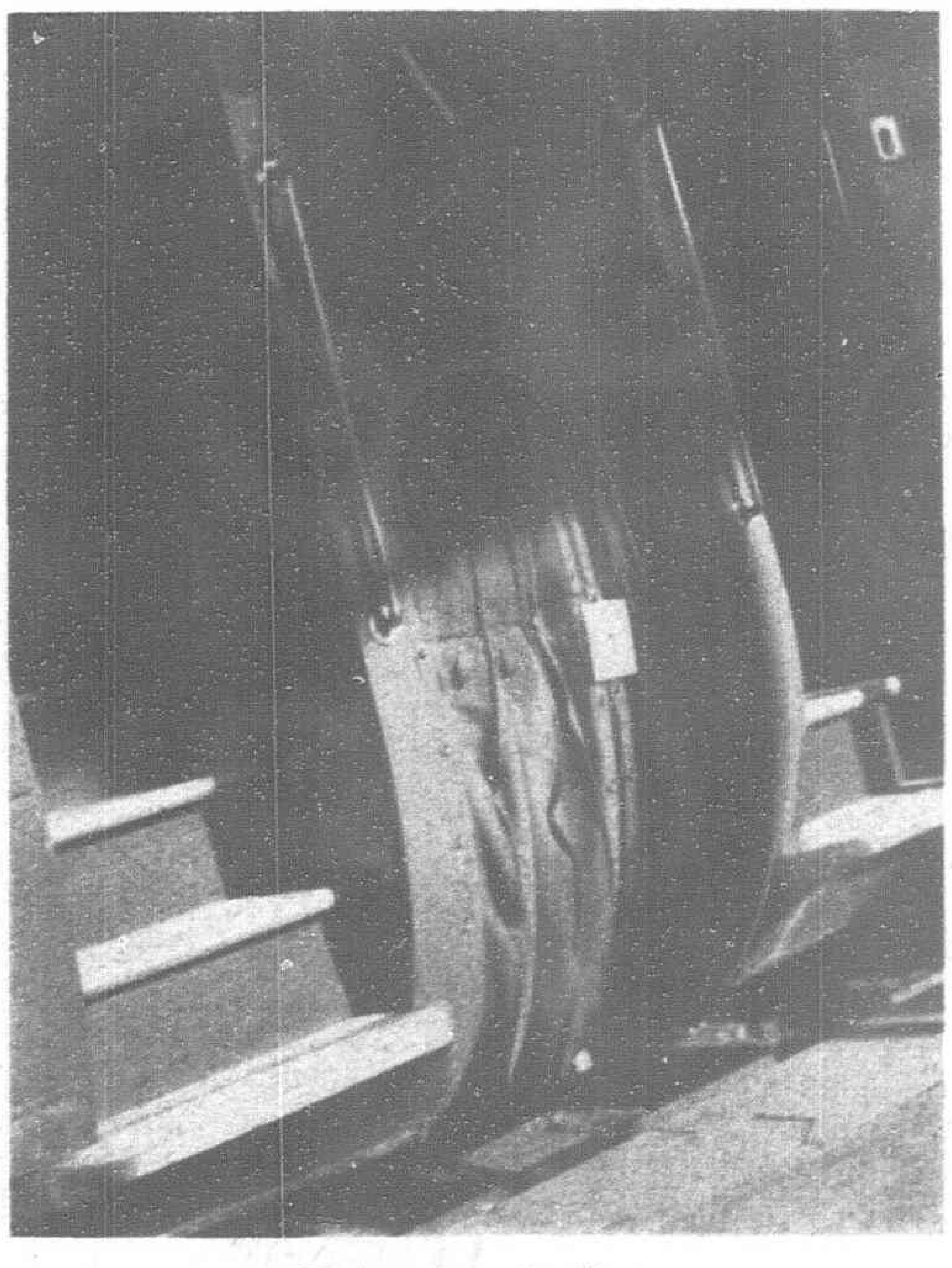
Description of the Engine

The principal dimensions of the locomotive are shown in the accompanying table. Special attention is called to the fact that, due to the necessity of building an engine within a limited axle weight and yet being capable of producing necessary boiler power, every part is built as lightly as possible. For this reason, cast steel is used for the cylinder, nickel steel plate for the boiler, high quality cast steel for the main frame, and aluminium alloy for the brake cylinders, cylinder front covers, and all the oil and grease cellars.

Though the general principle of design is largely based upon American practice, a good deal of ingenuity was exercised in designing the fire box so as to make it suitable for using Fushun coal and in adapting several parts to local conditions in Manchuria.

Lubrication

With regard to the lubrication of the engine, special care was exercised in making possible the "long-run, no-touch" system which would be extremely important for an engine of this nature. Thus the soft-grease-forced lubrication is employed in the brass and the hub of the driving journal, and the oil-forced lubrication in the engine truck, guide bars, link block, etc. The soft-grease lubrication is also applied to the main rod and the main of side rod by using the floating brush, and to other crank pins.



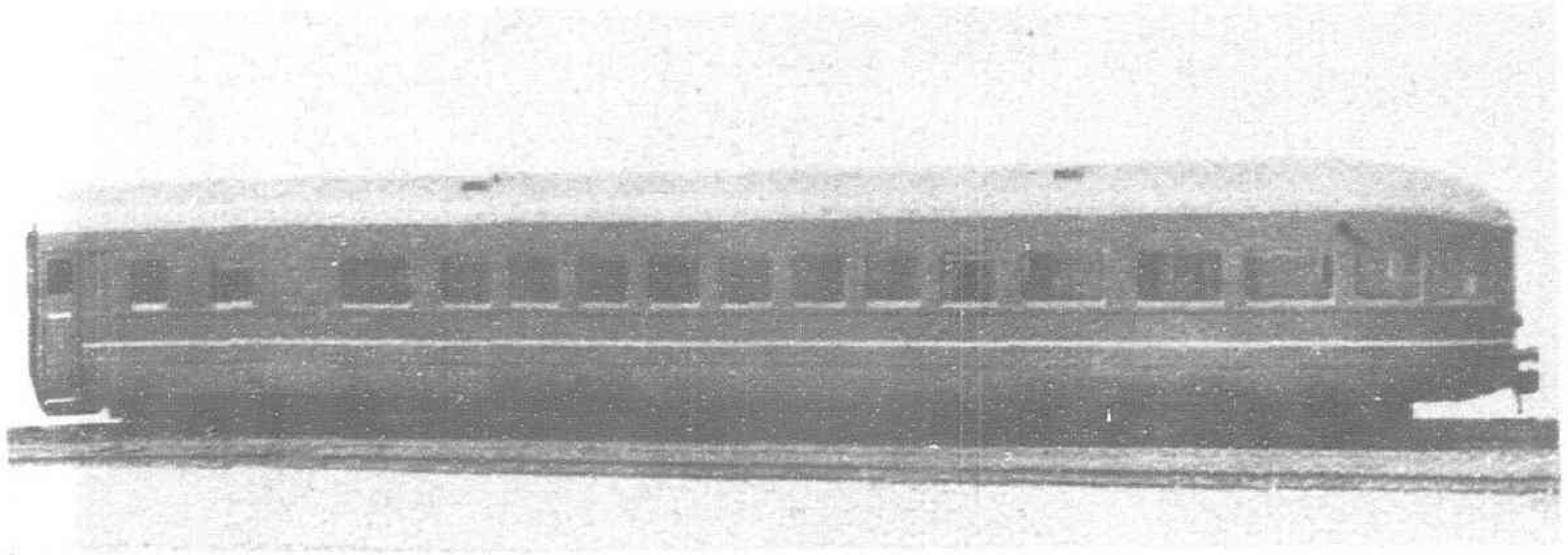
Entrances to Cars

Stream-Lined Cover

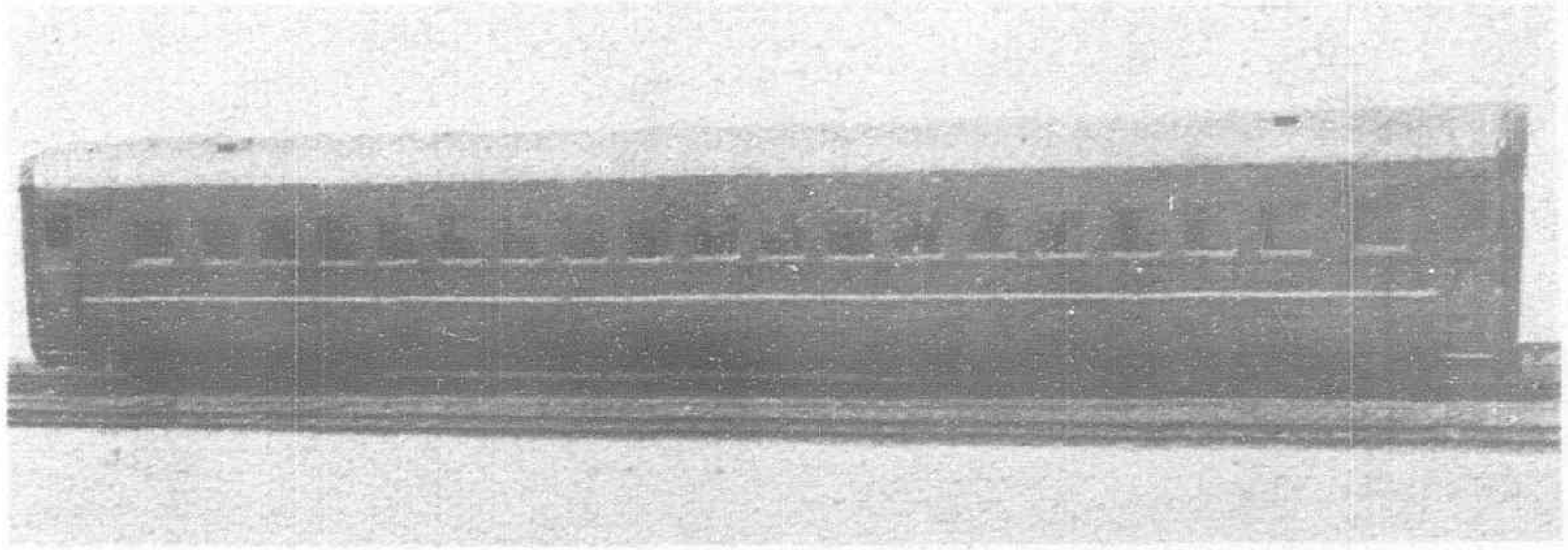
To apply to a locomotive the stream-lined cover of an ideal shape is generally considered difficult and seldom attempted. However, in the case of this locomotive, it is successfully attempted in such a way as not to interfere with the daily inspection, the boiler washing, and the general repair work. Its general idea may be obtained from the accompanying photograph. The streamer is laid around the smoke stack for the smoke and cinder with good results. The pressed channel is used for the skeleton of the stream-lined cover and the aluminium sheet and the bright-finished steel sheet for the cover sheet.

Tender

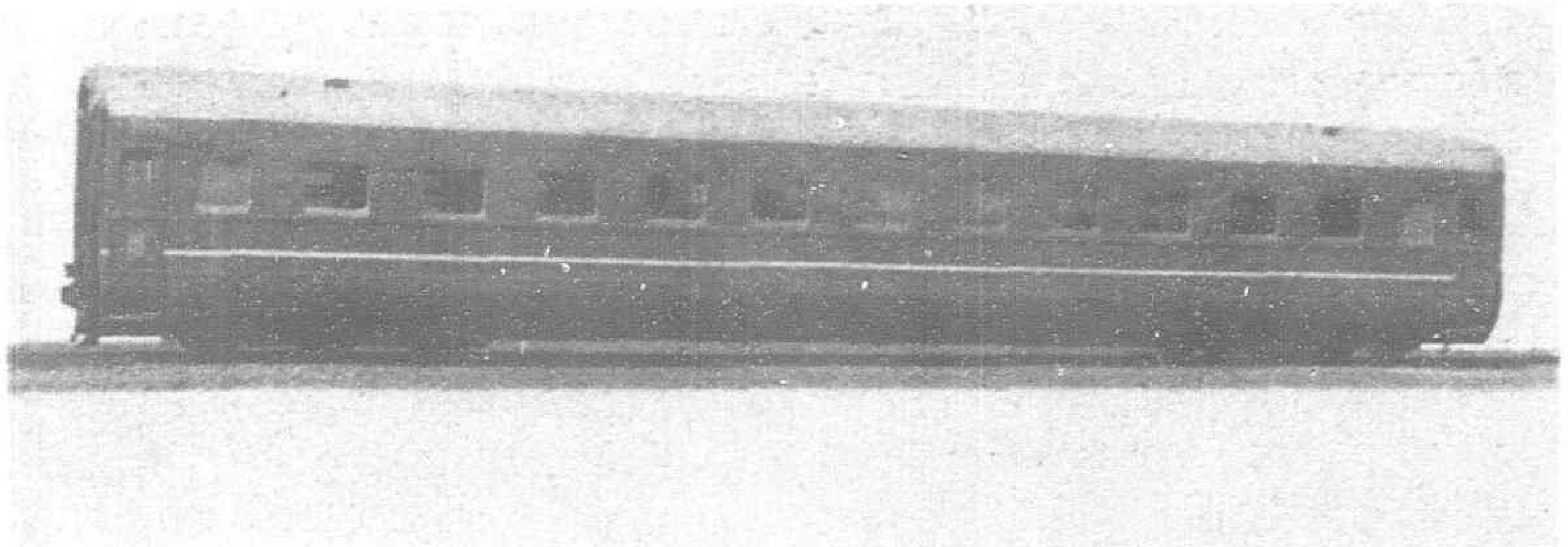
The tender truck is of the swing bolster type, while the Timken roller bearing is applied to the axles. The channel of built-up type is preferred in the tender frame and the tank-roof is covered with the same section as the passenger car. The coal bunker is fitted with aluminium cover which can be readily opened or closed. The diaphragm is placed between the tender tank and the passenger car, while the tender trucks are covered with the wheel cover of the customary shape.



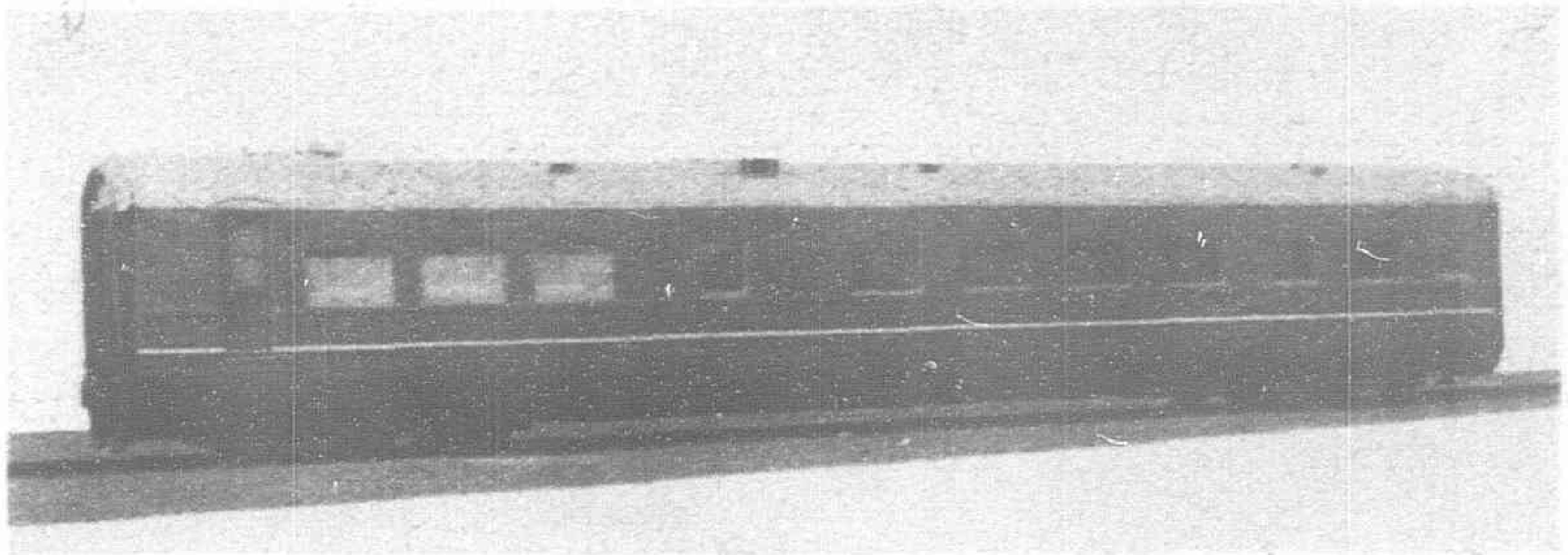
First Class Passenger and Observation Car



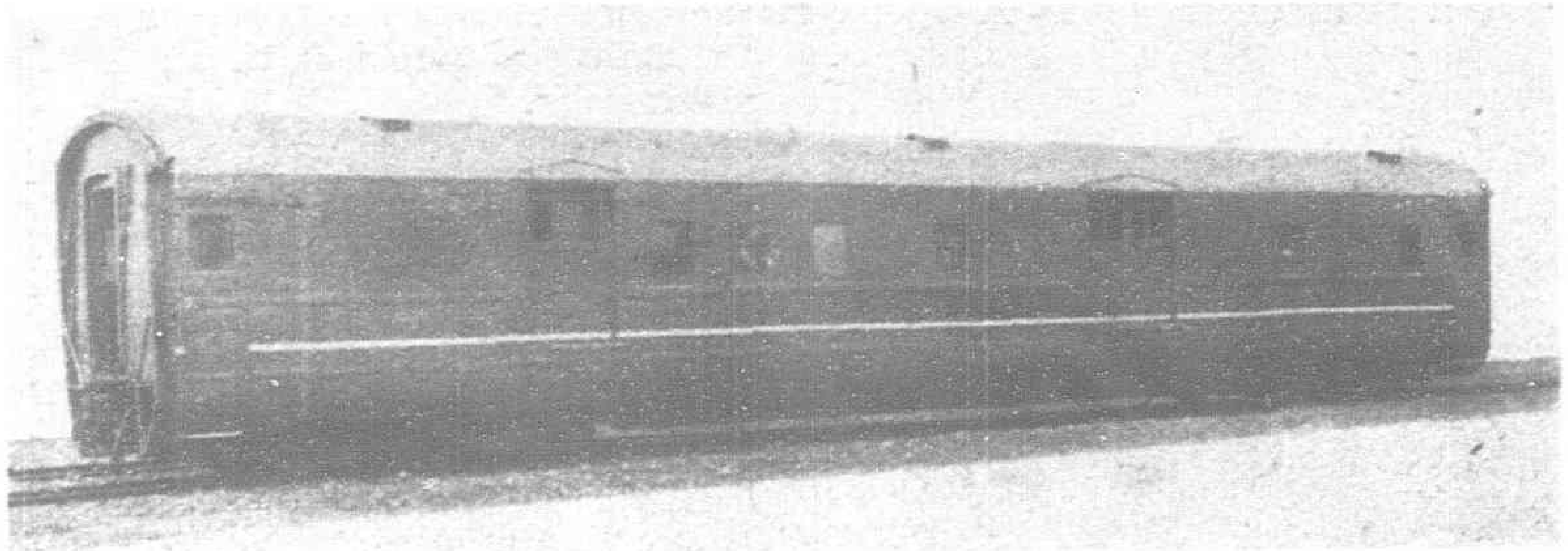
Second Class Passenger Car



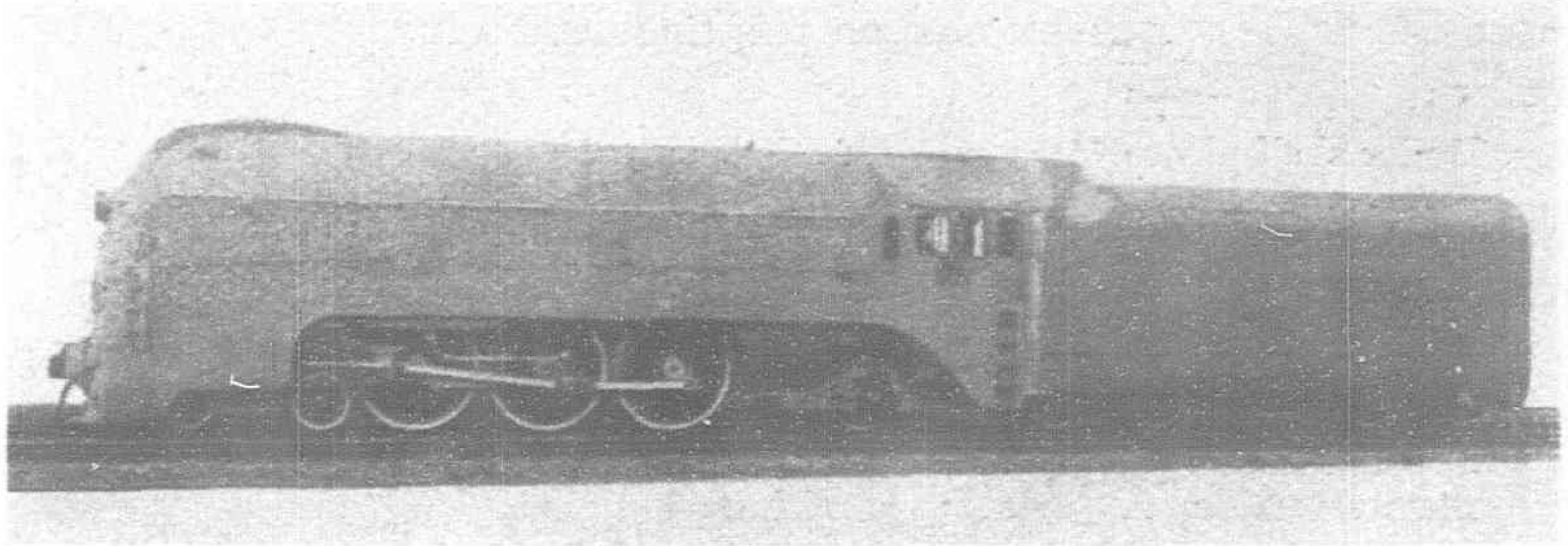
Third Class Passenger Car



Dining Car



Baggage and Mail Car

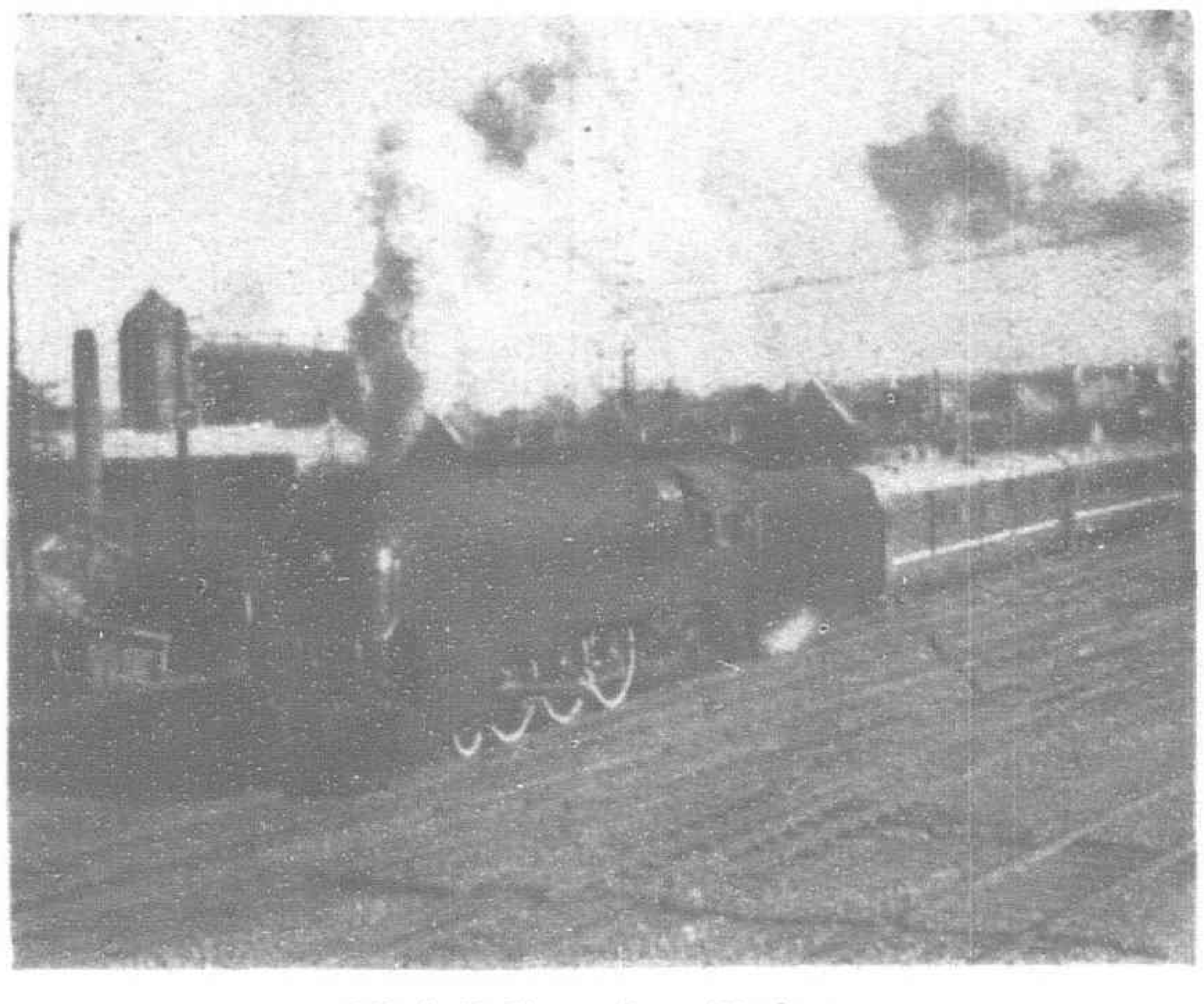


Side view of Locomotive

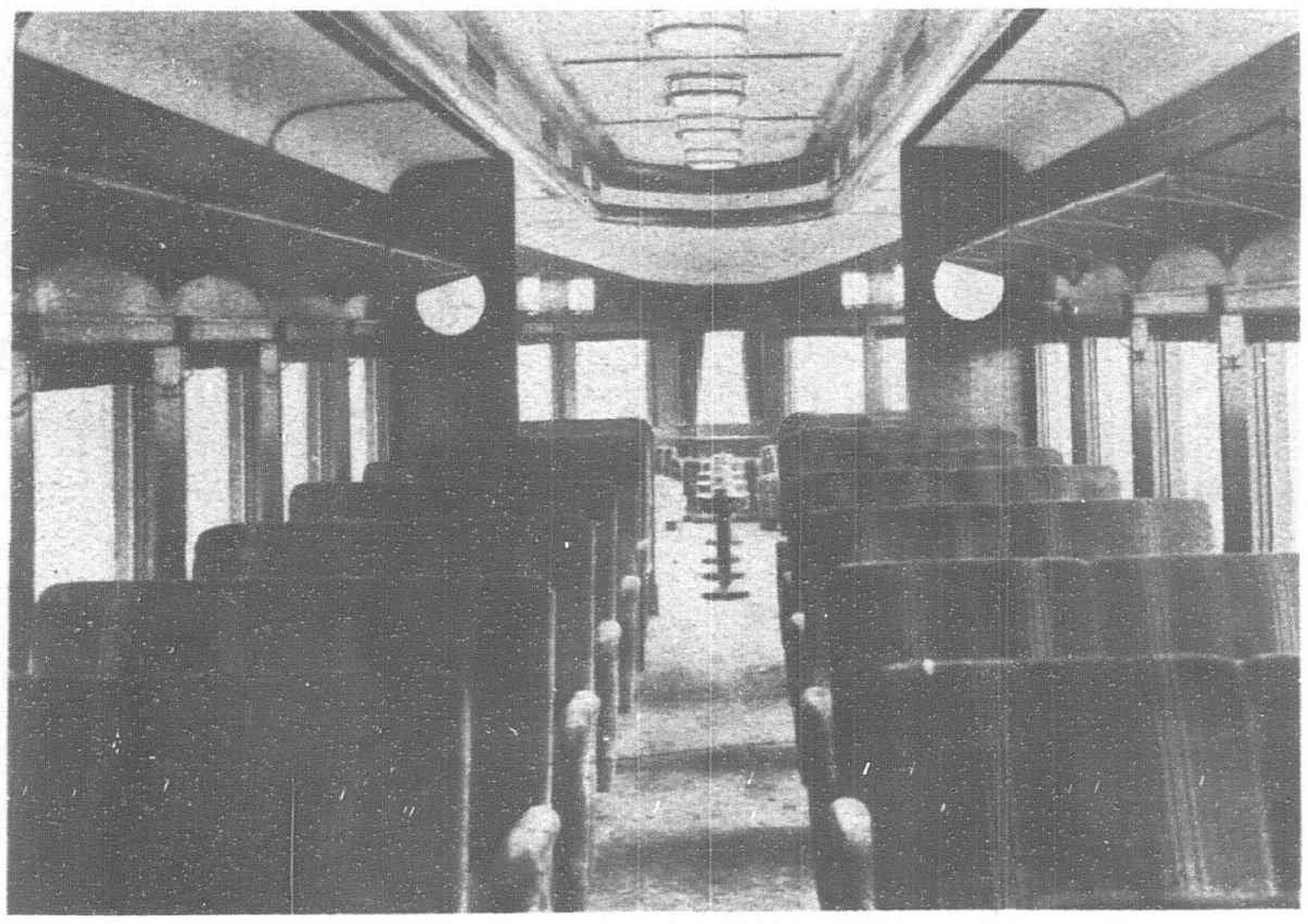
The following is the statistical résumé of the distinctive features of these locomotives :

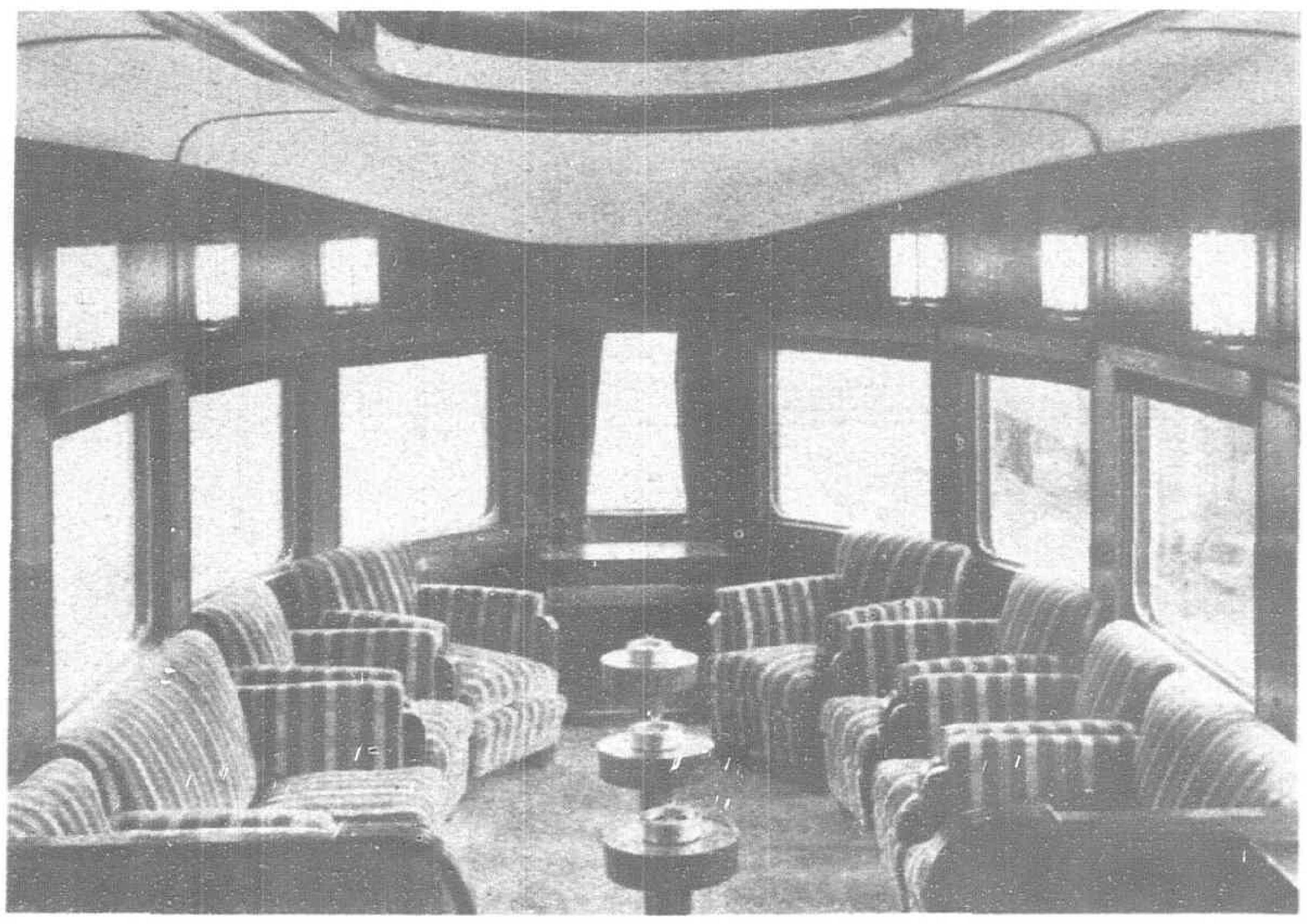
TABLE SHOWING THE PRINCIPAL WEIGHTS AND DIMENSIONS OF THE STREAMLINED LOCOMOTIVES OF THE SOUTH MANCHURIA RAILWAY

Owner	S.M.R. Co.
Builder	S.M.R. Workshops and Kawasaki Sharyo Co.
Gauge	1,435 mm. (4′-8$\frac{1}{2}$″)
Type of Locomotive	4—6—2—
Service	Passenger, special express
Fuel	Bituminous coal (Fushun)
Rated max. tractive force (86%)	15,850 kgs. (34,950 lbs.)
Factor of adhesion, wt. on driver ÷ tractive force	4.51
Cylinder diameter and stroke	600 mm. × 710 mm. (23$\frac{5}{8}$″ × 27$\frac{61}{64}$″)
Driving wheel diameter	2,000 mm. (78$\frac{3}{4}$″)
Boiler working pressure	15.5 kg./cm.^{2} (220.5 lbs./sq. in.)
Valve gear type	Walschaert
Valve, piston type, size	305 mm. (12″)
Max. travel, designed for	216 mm. (8$\frac{1}{2}$″)
Steam lap	35 mm. (1$\frac{3}{8}$″)
Exhaust clearance	3 mm. ($\frac{1}{8}$″)
Lead	6.5 mm. ($\frac{1}{4}$″)
Cut off in full gear, per cent	81%
Weight in working order :	
On drivers	71,470 kg. (157,560 lbs.)
On leading truck	24,500 kg. (54,010 lbs.)
On trailing truck	22,880 kg. (50,440 lbs.)
Total engine	118,850 kg. (262,010 lbs.)
Total tender	84,510 kg. (186,300 lbs.)
Total engine and tender	203,360 kg. (448,310 lbs.)
Wheel bases :	
Driving, rigid	4,160 mm. (13′-7$\frac{3}{4}$″)
Total engine	11,000 mm. (36′-1$\frac{1}{16}$″)
Total engine and tender	22,405 mm. (73′-6$\frac{3}{32}$″)
Coupler to coupler, knucle centers	25,675 mm. (84′-2$\frac{13}{16}$″)
Wheels, diameter outside tires :	
Driving	2,000 mm. (78$\frac{3}{4}$″)
Leading truck	920 mm. (36$\frac{1}{4}$″)
Trailing truck	1,270 mm. (50″)
Journals, nominal diameter :	
Driving, main	280 mm. × 330 mm. (11″ × 13″)
Driving, others	267 mm. × 305 mm. (10$\frac{1}{2}$″ × 12″)
Leading truck	165 mm. × 318 mm. (6$\frac{1}{2}$″ × 12$\frac{1}{2}$″)
Trailing truck	203 mm. × 356 mm. (8″ × 14″)
Boiler :	
Type	Extended wagon top
Steam working pressure	15.5 kg./cm.^{2} (220.5 lbs./sq. in.)
Diameter, first course, inside	1,960 mm. (77$\frac{5}{32}$″)
Diameter, third course, outside	2,130 mm. (83$\frac{27}{32}$″)
Tubes, number and diameter	70-51 mm. (2″)
Flues, number and diameter	132-90 mm. (3$\frac{35}{64}$″)
Length over tube sheets	5,150 mm. (16′-10$\frac{3}{4}$″)
Length of combustion chamber	1,067 mm. (42″)
Grate, size	2,919 mm. × 2,140 mm. (114$\frac{15}{16}$″ by 84$\frac{1}{4}$)
Grate, area	6.25 m.^{2} (67.3 sq. ft.)
Heating surfaces :	
Tubes	57.10 m.^{2} (615 sq. ft.)
Flues	191.05 m.^{2} (2,056 sq. ft.)
Fire box and combusition chamber	26.26 m.^{2} (283 sq. ft.)
Arch tubes	3.03 m.^{2} (33 sq. ft.)
Total evaporative	277.44 m.^{2} (2,987 sq. ft.)
Super heating surface	102.20 m.^{2} (1,100 sq. ft.)
Tender :	
Water capacity	37,000 kg. (9,780 U.S. Gallons)
Fuel capacity	12,000 kg. (26,460 lbs.)
Wheel, diameter, outside tires	920 mm. (36$\frac{1}{4}$″)
Axles, Timken roller bearings	152 mm. (6″)
Weight proportions :	
Weight on drivers ÷ total engine weight	60%
Weight on drivers ÷ tractive force (80%)	4.51
Total weight engine ÷ comb. heating surface 313 kg./m.^{2}	(64.1 lbs./sq. ft.)
Boiler proportions :	
Tractive force (85%) ÷ comb. heat. surface 44.4 kg./m.^{2}	(9.08 lbs./sq. ft.)



"Asia" Leaving Dairen


Interior view of first class Passenger and Observation Car


Interior view of Observation Parlor

Tractive force (85%) × diam. drivers ÷ comb. heat. surface 8.88 kg./m.^{2}	(716 lbs. in./sq. ft.)

DESCRIPTION OF THE SPECIAL PARTS

Boiler:

Boiler shell plates	Nickel steel
Firebox sheets	Special rolled carbon steel
Firebrick arch	*Extended type*
Fire door	Butterfly type
Feed water heater unit	Closed type
Feed water check valve	Top feed type
Water gauge	Column type
Superheater	E type
Throttle valve	Multiple type

Cylinder and running gears:

Axles, driving, engine truck and trailer	Hollow type heat treated
Brake cylinder	"Y" aluminium alloy
Buffer	Radial type with spring
Boxes, driving	Aluminium cellar
Crank pins, main	Hollow type
Cross-heads	Forged and heat treated
Cross-head shoes	Light nickel cast steel
Cylinder	Cast steel
Cylinder and valve bushings	Nickel cast iron
Cylinder cock	Air operated by foot valve
Driving tires	"TY75"
Other tires	"TY85"
Eccentric rod end	SKF spherical roller bearing
Engine truck frame	One casting
Engine truck leading device	Constant resistance rocker type
Frame, main	Cast steel (tensile 52 kg. /mm.^{2} elong. 32%)
Frame, rear	One casting
Guide bars	"FG60"
Lubrication, driver bearings and hubs	"Bosch" soft grease forced
Cylinder, valve and rods	"Rational" oil forced
Engine truck bearings, hubs, guide bars, link block, etc.	"Bosch" oil forced
All pins and bushing	Soft grease nipple applied
Pistons and rings	Nickel-chrome steel, forged, mounted on universal packing rings, hollow piston rods.
Reverse gear	ALCO type
Reverse shaft	Forged hollow
Rods, main and side	Specially heat treated, floating bush applied for both on main and main side.
Springs	Silicon manganese spring steel
Trailer	Two wheel Delta type
Valve gear	Duralmin tensile 42 elong. 32% applied for union link as trial.
Wheel centers	Cast steel, same as main frame quality

Cab and Fittings:

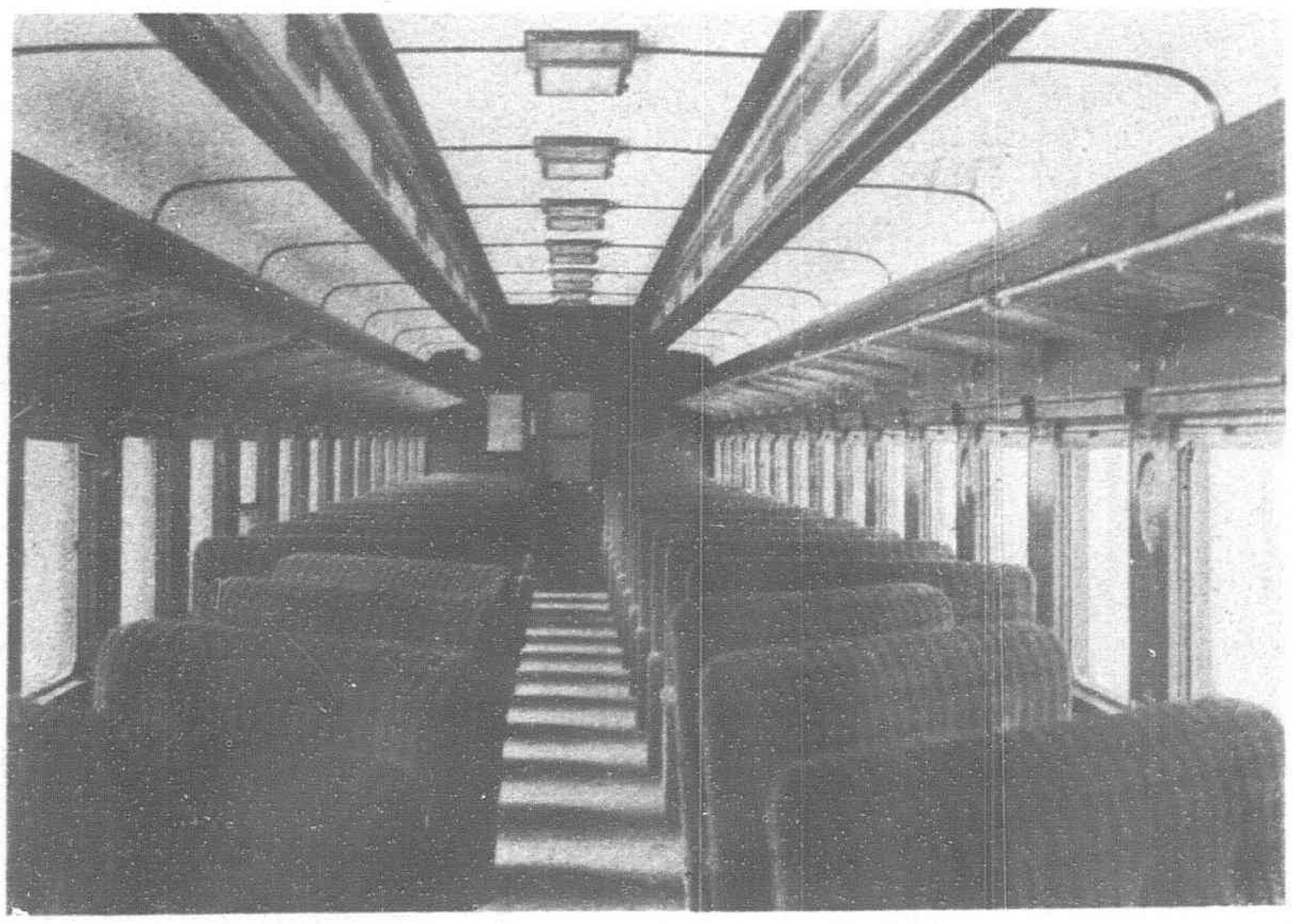
Cab	Vestibule type
Coal sprinkler	Yes
Steam chest and back pressure gauge	Yes
Lighting equipment	1 kilowatt Kawasaki type
Head light	500 watt, 400 mm. reflector
Air phone	Four Taimatsu type
Steam whistle	Five chamber ALCO type

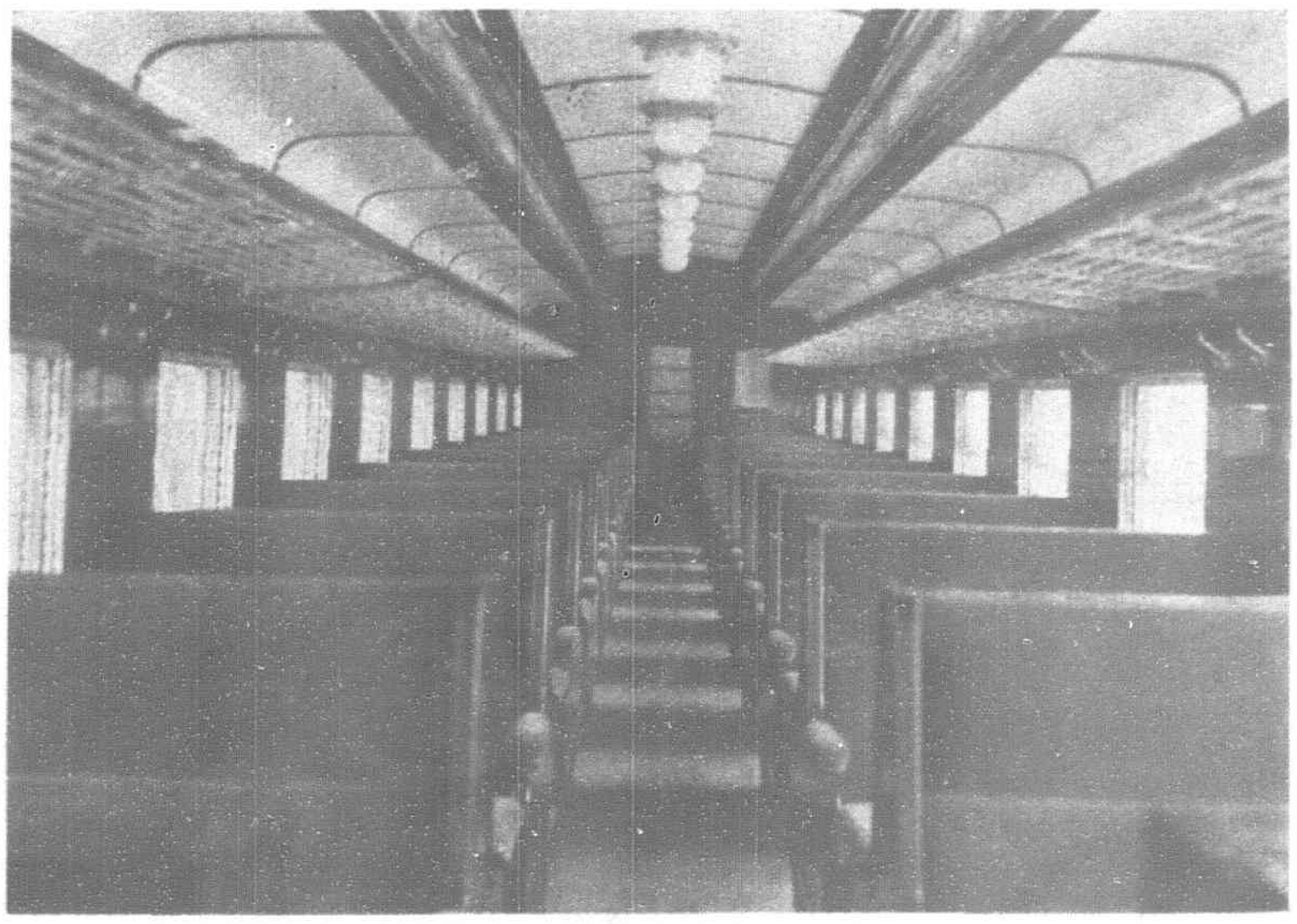
Miscellaneous:

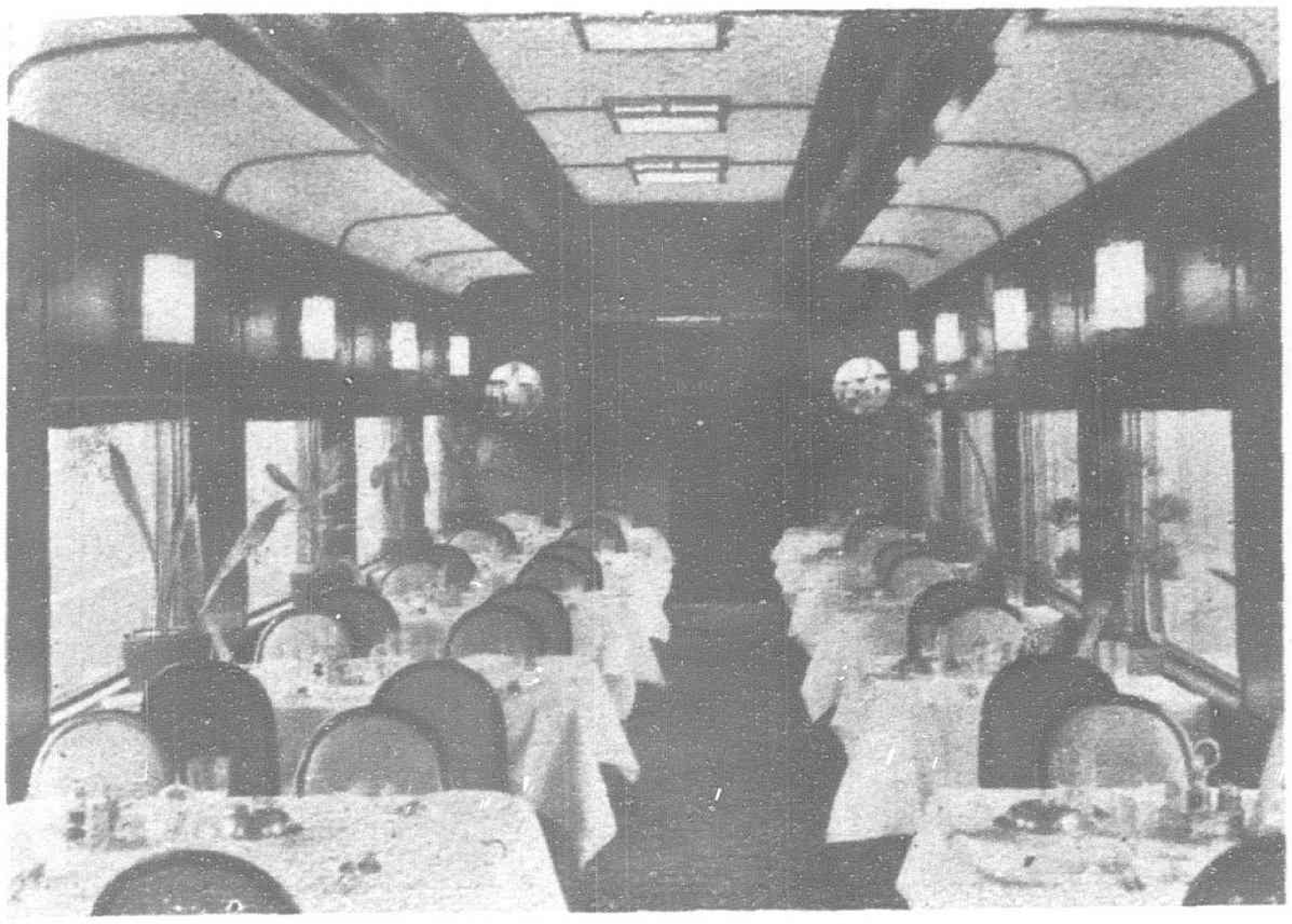
Brake	ET-No. 6
Couplers	Shibata type
Draft gear	*Ring spring type*
Stoker	Steam jet type
Tender truck bearing, etc.	Timken roller bearing

Characteristics in Construction

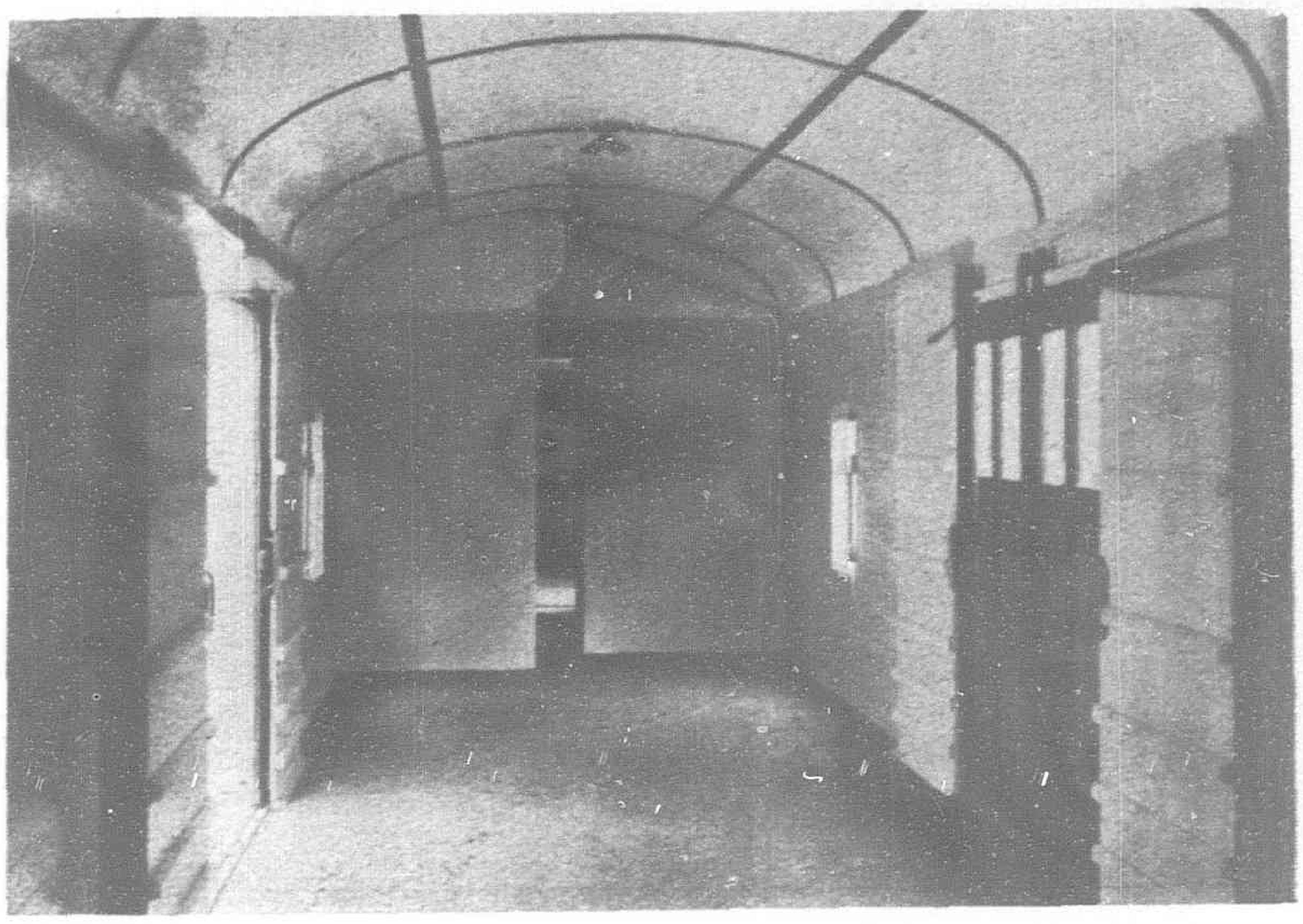
As has been mentioned above, the train as a whole constitutes a perfect stream-line so that the wind resistance can be reduced


Interior view of second class Passenger Car


Interior view of third class Passenger Car



Interior view of Dining Car



Interior view of Baggage Car

to the minimum. On the other hand, in order to diminish the weight of the body to the utmost limit, not only a light alloy of aluminium and magnesium is used as much as possible, together with a special high strength steel employed in important frame works but also a good deal of ingenuity is exercised in such details as retrenchment of the sectional area of the structure, application of the welding process, etc.

Roller bearings are used in all journal boxes so as to reduce the frictional resistance as well as to lessen the trouble of inspection.

Special care is taken in building the structure not only to prevent external vibration and noise disturbances from invading the inside of the car but also to eliminate the possibility of the car's own vibration turning into noise, so that even at full speed the riding quality of "Asia" is much superior to that of other slower express trains.

Moreover, with a view to maintaining the air inside free from dust and soot, which would possibly be caused by high speed operation, and also to making the atmosphere as delightful as possible, the Steam Ejector System air conditioning equipment is installed in all the cars except the baggage and mail car, which is to keep the air cool and dry in summer, and warm and damp in winter with the aid of the supplementary heating apparatus.

Trucks are all of six-wheel bogie type, at all the important points of which rubber heels are inserted to further reduce the vibration and noise disturbances.

The brakes are all Clasp Brakes and of the American Westinghouse system LN type.

GENERAL DIMENSION

	Baggage and mail car	*3rd class passenger car*	*Dining car*	*2nd class passenger car*	*1st class pass. & observation car*	*1st class passenger car*
Length between coupler knuckles ..	24,540	24,540	24,540	24,540	24,540	24,540
Width of body ..	3,056	3,056	3,056	3,056	3,056	3,056
Height from rail to top of roof	4,187	4,187	4,187	4,187	4,187	4,187
Height of coupler ..	890	890	890	890	890	890
Length between bogie center	17,000	17,000	17,000	17,000	17,000	17,000
Truck wheel base ..	3,400	3,400	3,400	3,400	3,400	3,400
Seating capacity ..	—	88	42	68	52	60
Tare weight	45,460	54,640	55,900	55,840	53,920	55,000
Gauge of track ..	1,435	1,435	1,435	1,435	1,435	1,435

Description of Cars

(*a*) *Baggage and Mail Car.*—Is of six-wheel bogie type, with a wide vestibule on each end, and a round roof. There is a mail room on one end of the car, which is adjoined by a mail distribution room. On the other end is an officers' quarters. The remainder of the car, that is between the officers' quarters and the mail distribution room, is made into a baggage room, with a lavatory built in one corner adjacent to the mail distribution room.

(*b*) *Third Class Passenger Car.*—Is of six-wheel bogie type, with a wide vestibule on each end and a round roof. Next to the vestibule on each end are a lavatory and a wash-room. A corridor runs through the middle of the car, dividing it into two sections, each consisting of a series of double seats facing one another. The total seating capacity of the car is 88.

(*c*) *Dining Car.*—Is of six-wheel bogie type with a round roof. Platforms are omitted on both ends so as to obtain wider space for dining services. On one end instead is provided a waiting room with seats for six persons, which is separated by a partition with a sliding door, from an adjoining dining-room, which can accommodate 30 customers. In the middle of the car and facing the dining-room are grouped together a cashier's stand, refrigerator, a cabinet, etc. The remainder of the space is occupied by a pantry and kitchen which is equipped with a heavy oil range.

(*d*) *Second Class Passenger Car.*—Is of six-wheel bogie type, with a wide vestibule on each end and a round roof. On one end are a lavatory of Japanese style and a wash-room, and on the other a combination lavatory and wash-room, a stewards' quarter and lockers. The main part of the car has a row of 17 revolving double seats on either side of the central corridor, making the total seating capacity 68.

(*e*) *First Class Passenger and Observation Car.*—Is of six-wheel bogie type, with a round roof and is divided into an observation parlor, seats for the first class passengers, a special room, and a group of adjunctive rooms. The very end of the car, which is the end of the train as well, has no platform as in ordinary express trains, and is externally shaped into a typical stream-line.

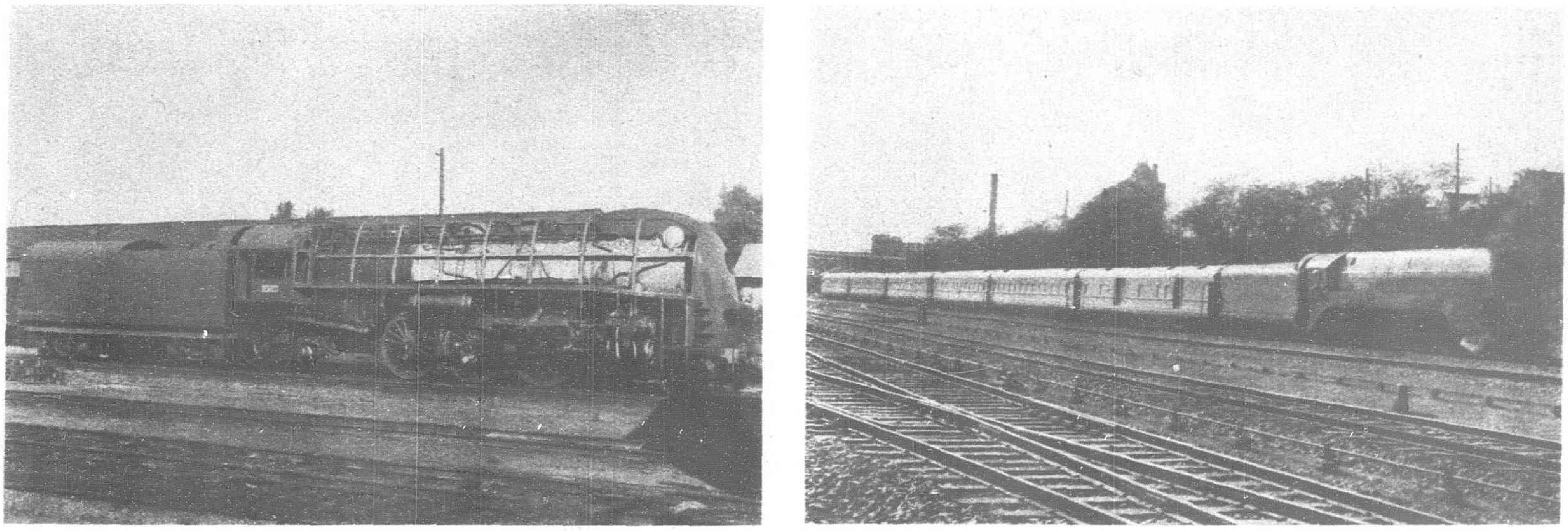
The observation parlor occupies this end. Reading and writing facilities are provided on one end of the parlor next to the first class passenger section, which is equipped with revolving double seats for 30 passengers. Next to this section is a special room which contains one sofa and two arm chairs. Then comes a group of adjunctive rooms such as a wash-room, ladies' toilet-room, men's lavatory, parcel-closet, a conductor's and steward's compartment and a closet.

(*f*) *First Class Passenger Car.*—Is of six-wheel bogie type with a wide vestibule on each end and a round roof. On one end of the car are a ladies' toilet and a wash-room, and on the other a men's lavatory, a wash-room, a conductor's compartment, a parcel closet and lockers. The main part of the car has 15 revolving double-seats on either side of the corridor which runs in the middle, making the total seating capacity 60.

Construction of Car Body

(*a*) *Under-frame.*—Is of rolled steel built-up type, and has the fish belly center sills and the side sills of channel bars which are firmly supported by the pressed steel diaphragms and the cross beams made of top and bottom cover plates. In other words it comprises two body bolsters, two main cross bearers, two end sills, four diagonal braces and several floor beams. At the vestibule there are added the buffer beam and the platform short sills; the vestibule posts of the beam are tightly fastened to the steel.

With regard to the material for the underframe, a special high strength steel is used in order to reduce the weight and at



Two views of the New Super Express "Asia"

the same time to maintain sufficient strength. The specially prepared rivets and the welding wire are used for fastening the parts.

(*b*) *Floor.*—Is double plied, top ply is laid length-wise and the bottom one diagonally, between which two sheets of building paper are inserted. Japanese ash has been adopted for the floor of the Baggage and Mail Car and American timbers for that of the other cars.

Between all the nailing strips and the under frame, except in the lavatory, first a false flooring of galvanized iron sheets is laid, and then on top of it a layer of compressed kapok. Both over and beneath the nailing strips are inserted a felt band of 3 mm. in thickness for the purpose of sound insulation. Finally either carpet, rubber sheet, or linoleum is laid over the flooring according to the different classes and purposes of rooms.

(*c*) *Side Walls.*—The side posts are of pressed steel plate and firmly riveted or welded against both the cant rails and belt rails which are made of special high strength steel.

Steel plate is used for the side panel, which, however, is only 1.5 mm. in thickness above the belt rail. Veneer board is used, except in the baggage and mail car, for the inside panel which then is covered with surface board of walnut, maple and elm on the inside. Moreover a hair felt of 25 mm. in thickness and a flannel are filled in between the boards of the side wall for the purpose of sound and heat insulation.

(*d*) *Roof.*—A steel roof sheet of 1.5 mm. and a veneer board of 5 mm. are used for the roof with sound and heat insulation inserted in between as in the case of the side wall. Steel and wood carlines are distributed at several points with a couple of steel purlines placed lengthwise.

(*e*) *Windows.*—All the windows are double-metallic-sashed, glazed and to be raised only. A burnished glass is used for the windows of the second or higher class passenger cars, and a morocco glass for those of lavatories and wash-rooms.

On account of the complete air conditioning all the windows are usually kept shut, except in case of necessity when they can be opened with keys which remain in custody of the conductor. The bevel gear system is adopted for the windows of the second or higher class passenger cars. Inside the window posts a felt is applied in order to adjust the clearance as well as to prevent the leakage of draft and rain. To insure further against the infiltration of dust, weather strips are carefully fitted in on the outside of the windows. Each window is equipped with a roller blind, outside of which is painted with aluminium powder so that the heat from the sun may be reflected away.

(*f*) *Interior Decoration.*—The seats in the second and third class passenger cars are fitted with cushion springs made of a piano wire, and plush coverings. Those in the first class passenger car are of double cushioning and fitted with silk velvet coverings. As has been mentioned elsewhere in this article, the seats in the first and second class passenger cars are made in such a way that they can readily be revolved in three directions, *i.e.* in the direction of the train's course, facing the window, and against the direction of the train's course.

Basket racks, ash receptacles and other necessary equipments are also installed.

Vestibule

Every vestibule has on either side a suspending and sliding entrance door, made of a light alloy, with a glazed window in the upper half. Beside being a hinged trap-door, it is constructed in such a way that, when it is closed, it may be securely supported at all sides and absolutely insured against loosening. A hand brake is installed in all the vestibules for emergency purposes.

On each end of the car, outside of the vestibule, there are attached double diaphragms, outer and inner, the former having the same shape as the cross section of the car body so that it may prevent the possible air current which would be caused by the valley to be created between cars. A fireproof cover is placed on top of the outer diaphragm.

Both of the diaphragms are suspended from the car body by means of coil springs in order to allow their free movement apart from the movement of the car body. In addition, the lower part of the outer diaphragm is made separable for the convenience of both coupling and uncoupling as well as inspection of cars.

Side-Cover for the Underframe

In order to help reducing the wind resistance, a side-cover is attached to both sides of the underframe of the car, thus making the stream-lining more complete in shape. It is made of an aluminium sheet placed over a framing of fine steel angle bar and suspended from the bottom of the side sill by means of hinges. It also is partitioned into sections of 2-2.5 meters each in length, so that any one of them may be pulled open and hooked up to the belt rail for occasional inspection purposes.

Trucks

The trucks are of six-wheel bogie type and equipped with equalizers. Rolled disc tyred wheels of 915 mm. in diameter are adopted, the capacity of the axle being 14.5 metric-tons. The journal boxes are all equipped with SKF double roller bearings. The truck frames and the outside bolsters are made of the built up type of special high strength steel all welded together in order to reduce the dead load; the center bolsters are of cast steel. All springs are made of silicon manganese steel. Also rubber heels are applied at all important junctures in prevention of the transmission of noises to be caused by the vibration of the truck.

Couplers and Draft-Gears

The "Shibata" bottom operation automatic couplers and "Sumitomo" ring spring draft gear are employed.

Air Conditioning Equipment

With a view to maintaining throughout a year a refreshing and delightful atmosphere on the train, the steam ejector system air conditioning equipment is installed in all the coaches of this

(*Continued on page 61*)

Artificial Lightning made with Two-and-a-Half Million Volts

Largest Generator in the Far East Completed in Japan by the Shibaura Engineering Works

The interruption of electric power service has frequently been experienced during a heavy thunderstorm, in fact, it has been mostly due to some damage caused by the strokes of lightning falling on a high tension power line system which transmits electricity from the generating stations remotely situated to the substation in a large city or to a center of power consumers. Such disturbances due to lightning have long been considered unavoidable because of nature's mighty power being involved, but in recent years owing to the great progress made in the investigation of natural lightning as an electrical phenomena, much information on the properties of lightning and its effects have been made available.

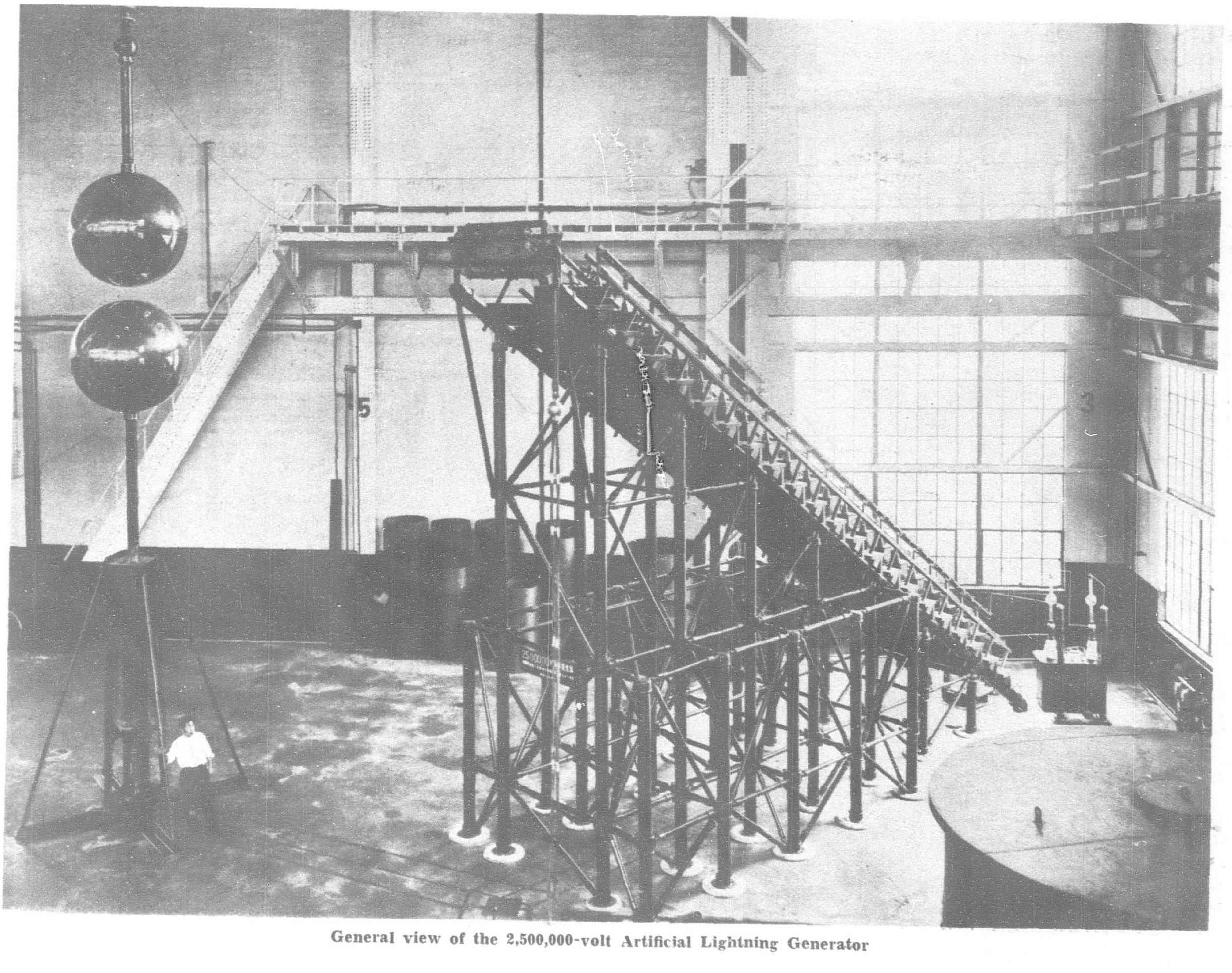
As a consequence thereof, not only the strength to withstand the lightning disturbances in a power transmission system have been improved, but also many effective devices for its protection in the form of lightning arresters have been developed. Thus, the continuous efforts of engineers to overcome nature's mighty power of lightning by means of utilizing electric science have been quite successful, so that, the transmission of electric power has now been protected from interruption due to lightning troubles which are considered the most undesirable insecurity against the service of power feeding large city and industrial districts.

In order to test and assure the strength of electrical apparatus, it has been necessary for the manufacturers to devise a method of producing an artificial lightning, or impulse voltage as it is called scientifically, which must correspond both in magnitude and in behavior to the natural lightning surge which may appear in the actual transmission system.

The construction of a power transmission system operating on 220,000-volts has been planned in Japan, and the protection of this system from lightning disturbance has to be made absolutely perfect without any failure. Therefore, it being an important problem, much greater attention has been given to testing and studying of artificial lightning. As a result, the requirements for greater precision in making such tests have become an important matter.

A new powerful artificial lightning generator has recently been completed by the Shibaura Engineering Works, the leading manufacturer of electrical machines in Japan, and it is set in the laboratory of this works as a useful high voltage testing equipment. It has been successfully operated to produce 2½ million volts at its maximum output, which is the highest voltage ever produced artificially in the Far East.

The principal element of the equipment consists of 40 high-voltage electrostatic condensers of oil-filled type mounted on the steps and supported by a frame work of insulated pillars, made of Shibalite, a type of laminated insulating material, which can withstand a stress of very high voltage.



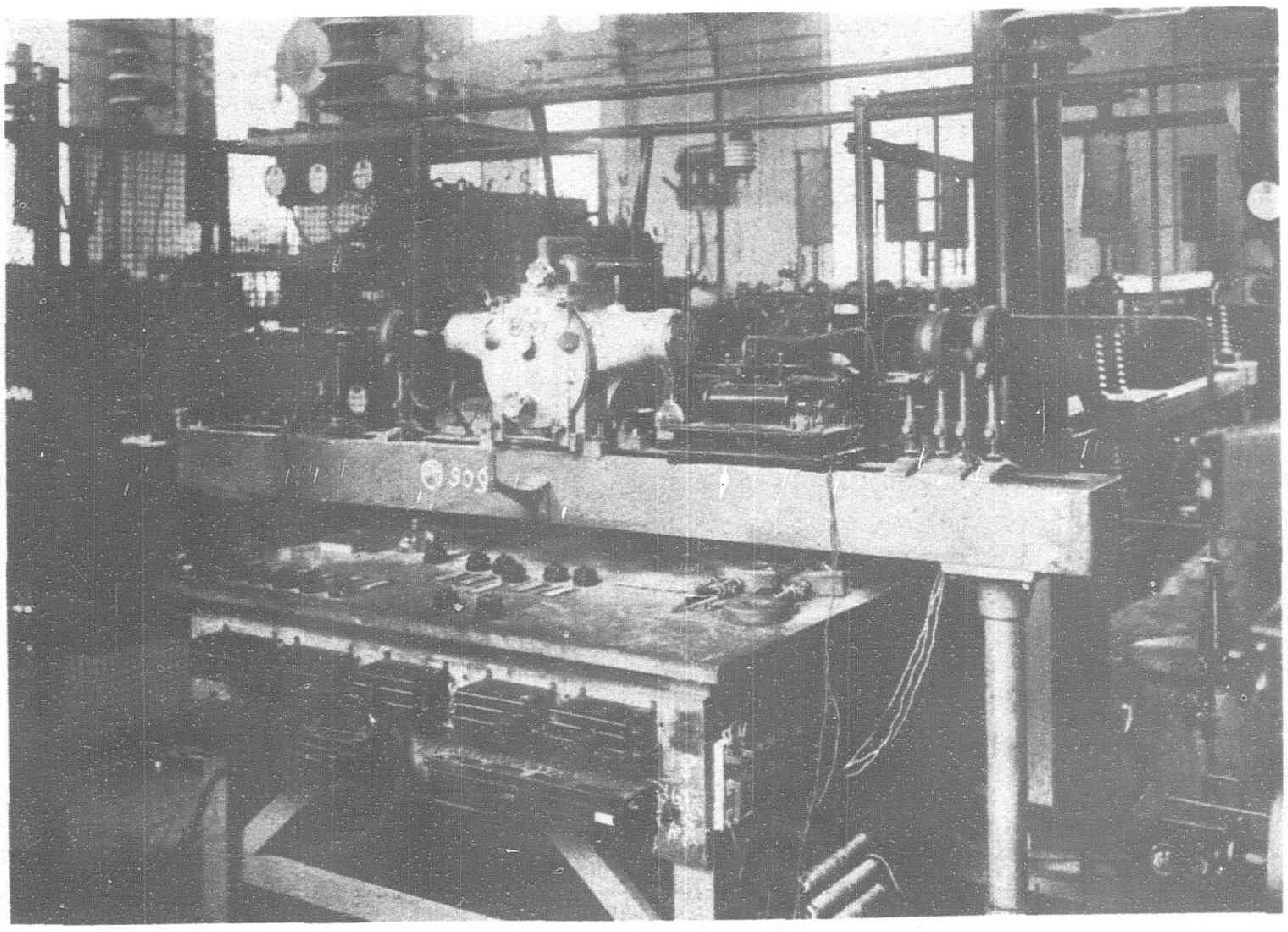
General view of the 2,500,000-volt Artificial Lightning Generator

These electrostatic condensers are arranged to be electrically charged in parallel by the ordinary power source through a step-up transformer and a pair of rectifying tubes, and when they are fully charged, they are automatically connected in series by the spark discharge through 20 sets of small gaps, resulting in production of a very high voltage surge accompanied by spark and sound of great intensity. Thus, an electric potential of a few millions of a volt is generated, but only for a few millionth fractions of a second during the discharge.

The electric condensers described above may be likened to the thunder clouds suspended in the sky and the violent disruptive effect of natural lightning as being produced by abruptly releasing considerable quantities of electrostatic energy stored in the condensers.

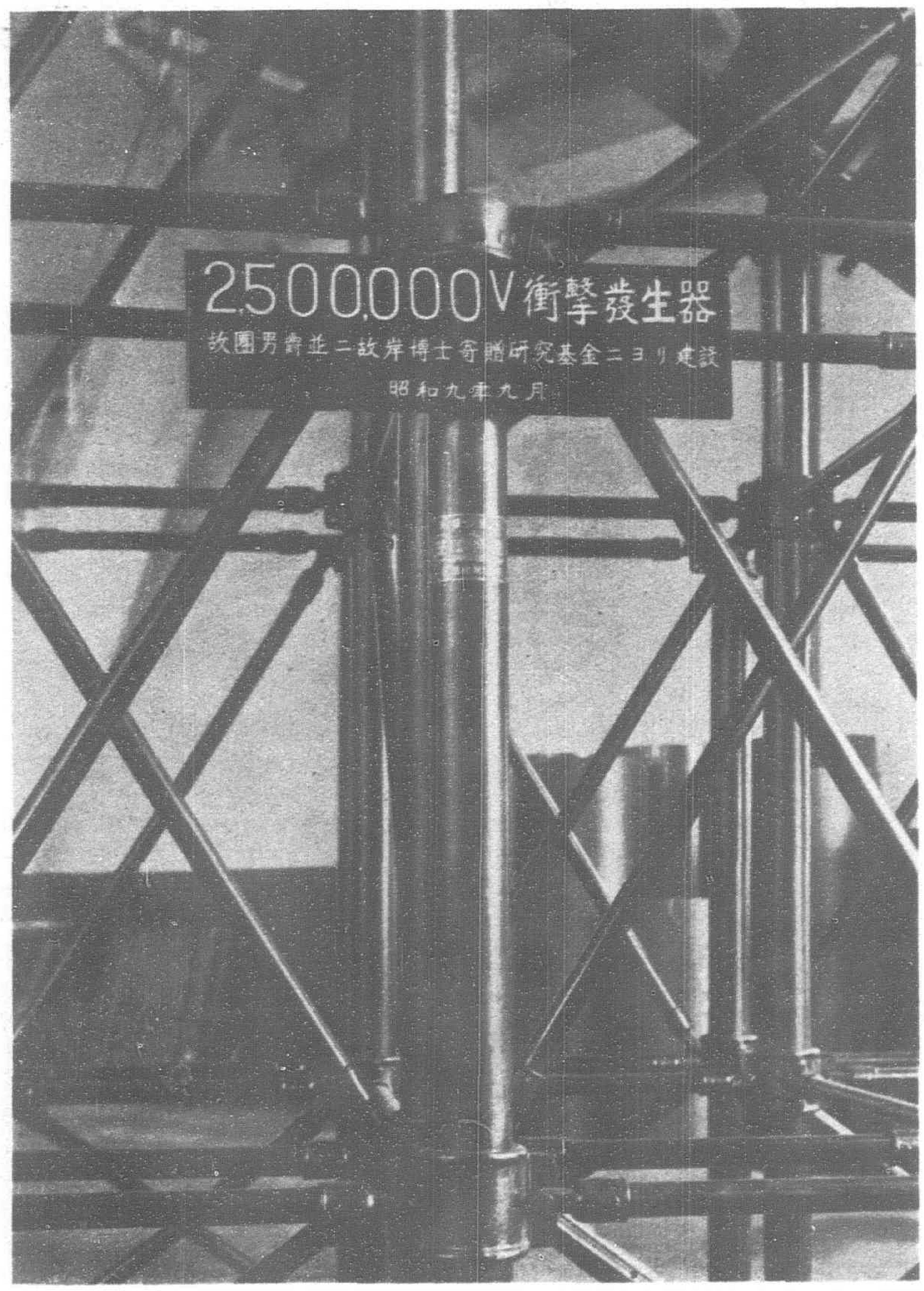
The principal features of the lightning generator are as follows:

Maximum voltage	2,500,000-Volts
Maximum energy	17,000 Joules
Total electrostatic capacity	0.0055 Microfarad
Rating of the Condenser	0.22 mfd., 75,000-Volts
Minimum inductance	70 Microhenry
Type of the circuit	Improved Marr circuit
Total height	7.5 M.
Floor space	10M. × 3.5 M.

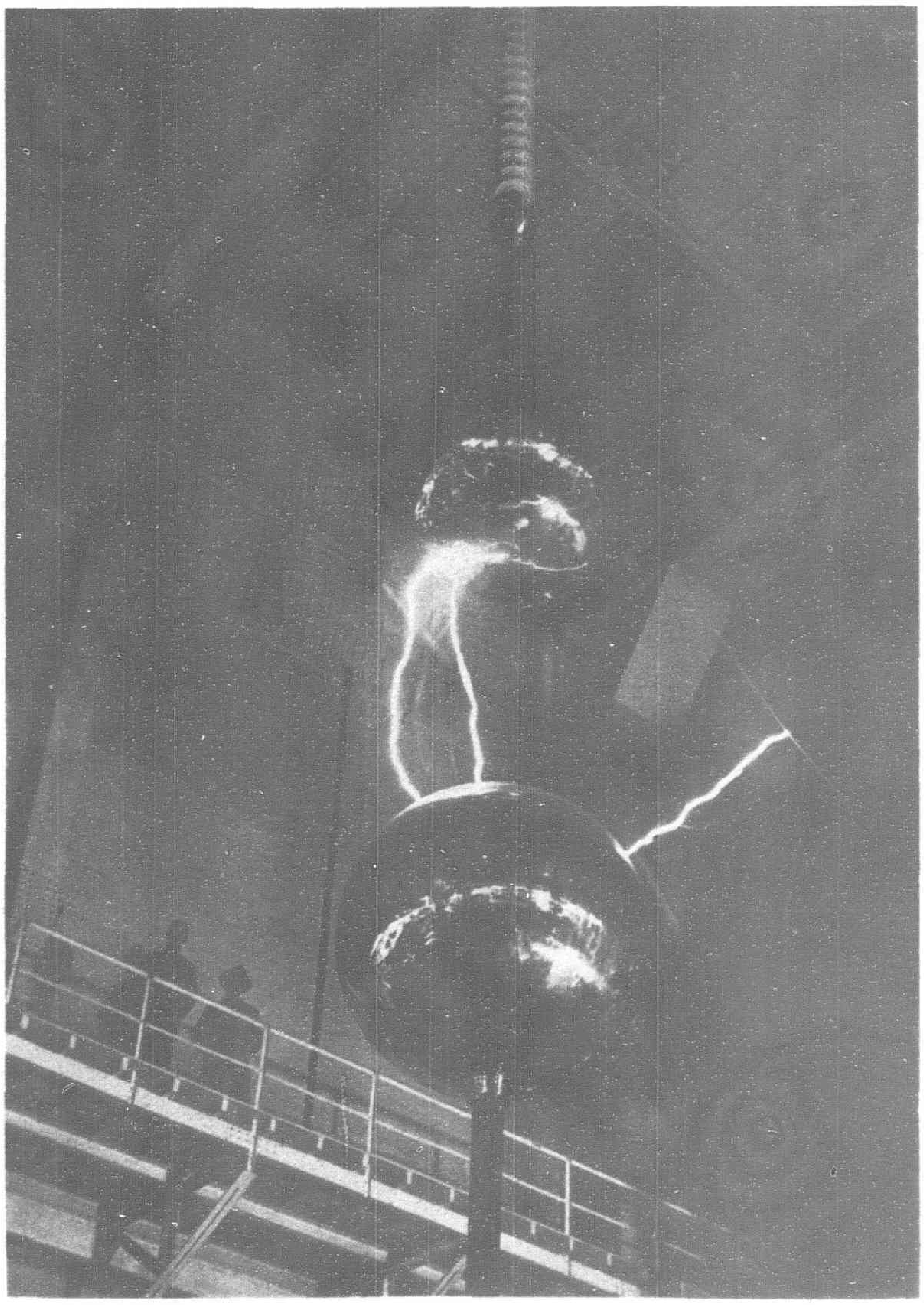

Cathode Ray Oscillograph for Investigating Phenomena of short duration—a few millionths of a second

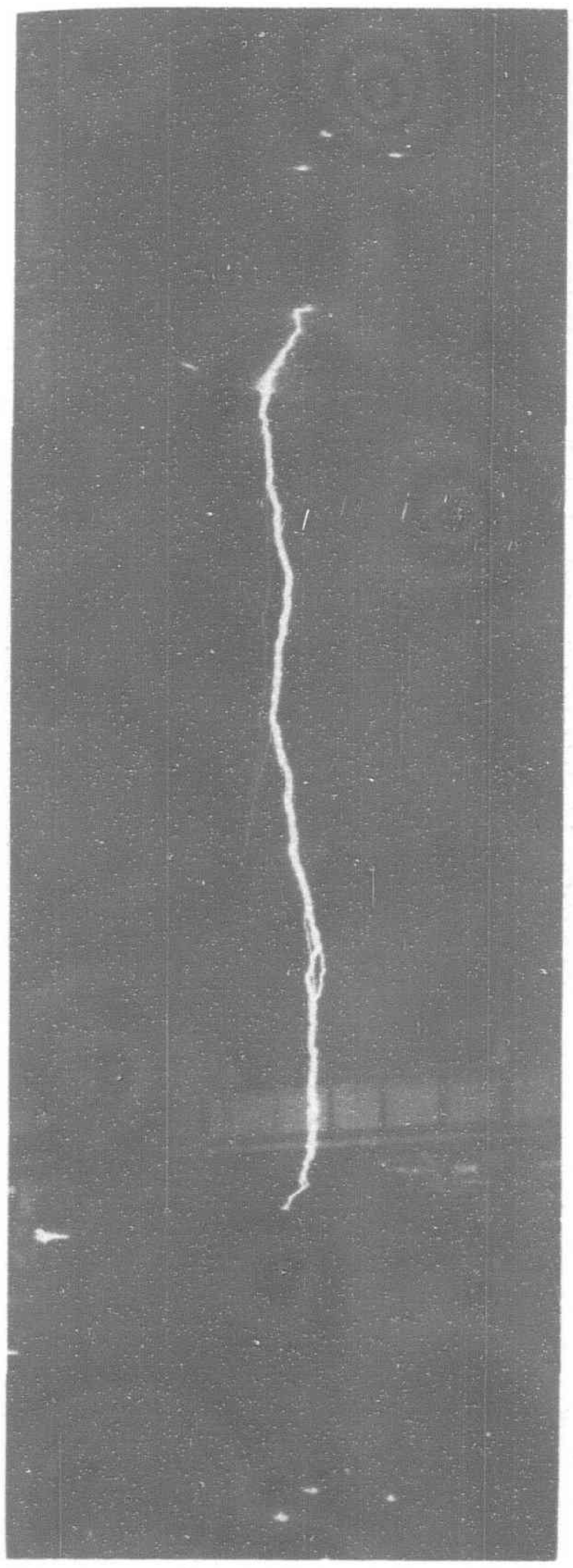
A pair of large spherical balls shown in accompanying illustrations are made of brass plate 1½ meter in diameter. They were constructed for the purpose of measuring the value of lightning voltage produced, because the spark over voltage of a gap between the spheres has a regular relation with their distances. The distance or the gap of the spheres can be controlled by a motor mechanism and the value of voltage can be read by a scale.

An accompanying photograph shows a spark discharge bridging a gap two meters in length which corresponds approximately the impulse voltage of two million volts. A spark discharge of

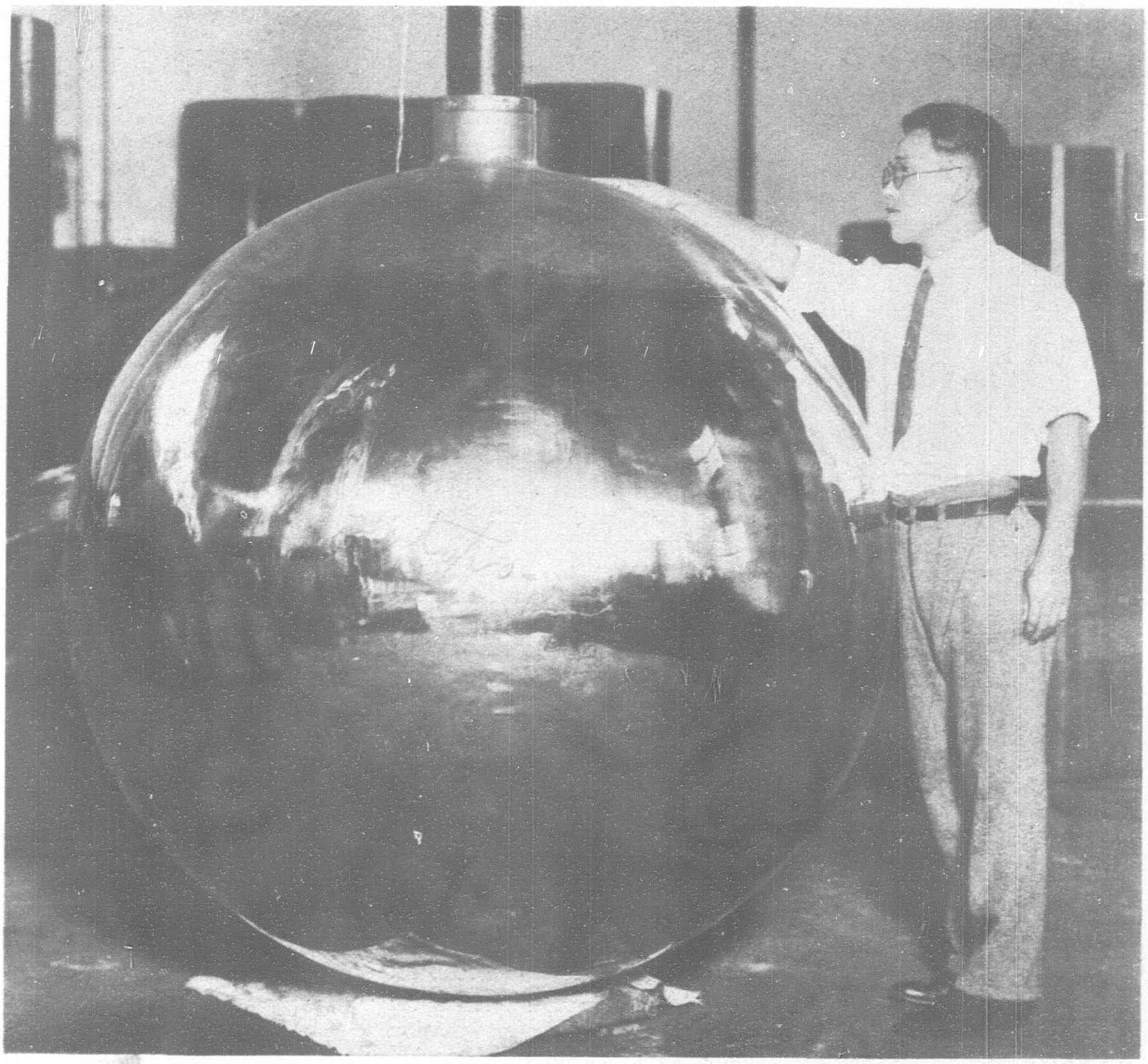


Framework of "Shibalite" Insulating Pillars


Photograph showing spark discharge



Spark discharge at 2,000,000-volts bridging Gap of two meters



Showing a one-and-a-half meter Sphere

up to three meters in length can easily be obtained by this equipment. Although it is, of course, considerably smaller compared to the natural thunderbolt, the artificial lightning can reproduce the same effects as the natural lightning in its electrical mechanism, and the capacity of our facilities is sufficient to fully study the present-day insulation problems in the laboratory. The equipment is now being utilized as an equipment particularly suited for testing the insulating strength of completed electrical machines and also the materials used for their construction as well as obtaining the characteristics of the apparatus for lightning protection.

For many years insulation testing with direct and alternating voltages has continued to provide useful data in connection with insulation problems related to normal voltage operation. But, in the meantime, insulation failures and service interruptions have resulted from surges due to lightning. In recent years, therefore, the importance of testing by artificial lightning has been recognized. It is very certain that this equipment is expected to contribute much to the future progress in the studies of high voltage phenomena and also to the technic of manufacturing electrical machinery and apparatus.

Turkestan Railway Tunnel

China is planning railway construction in Chinese Central Asia. Already the Peiping-Suiyuan railway runs 550 miles into the interior, connecting Tientsin with Paotouchen in Suiyuan Province. Now the plan is to extend the line through Wuyuan, Minghsia, Wuei, Chiayukwan, the western end of the Great Wall, Ansi, Hami and Turfan, the western terminal being either at Tihua or Tacheng. Other factors beside the loss of Manchuria enter into the desire of the Chinese to build a railway into Central Asia. Chinese control in Sinkiang is tenuous at best, and the officials seeking a unified nation realize that without adequate communications the northwestern provinces cannot be administered or made available for settlement by the surplus population. The proposed line, although far to the south of it, for a long distance would parallel the Trans-Siberian railway, and it would be of extreme strategic importance. It would run 1,400 miles from the present end of the Peiping-Suiyuan railway, and in all would tap territory as far inland as 2,000 miles from the Yellow Sea. Considerable secrecy surrounds plans for the line. How construction would be financed has not been made known, but $2,000,000 has been ear-marked for initial construction.

Irrawady Bridge

On Tuesday, January 2, the Ava Bridge over the river Irrawady at Sagaing, near Mandalay, was formally opened by the Governor of Burmah, Sir Hugh Stephenson. The bridge, which is nearly three-quarters of a mile in length and has ten spans, nine of 360-ft. and one of 260-ft. in length, replaces the existing ferry between Amarapura and Sagaing. While it has been built primarily for railway purposes, at the request of the local Government, which has contributed some £142,000 towards the total cost of about £1,125,000, cantilever supported roadways, each 12-ft. wide, have been built out at either side of the railway track. The building of the bridge was sanctioned in 1927 and an immediate start was made, but the work of sinking the caissons had to be suspended each year during the rains, when the river was in spate, making progress somewhat slow. The designs for the bridge were prepared by, and the work has been carried out under the supervision of, Messrs. Rendel, Palmer and Tritton, of Westminster, the contractors being Braithwaite & Co. (India), Ltd. The materials were supplied from Great Britain, Burmah and India, and the total weight of steel used in the superstructure is estimated at close upon 11,000 tons.—*The Engineer.*

Growth of the Soviet Far East*

The Far Eastern Region of the Soviet Union has come into increasing prominence in the past few years due to its position on the Pacific Coast of the U.S.S.R., the establishment within its borders and opening up for colonization of the first Jewish Autonomous Area (Birobidzhan) and its growing economic potentialities. The latter have received a new impetus since the practicability of commercial navigation by way of the Northern Sea Route between Archangel and Vladivostok has been established by the West to East voyages of the *Sibiriakov* in 1932 and the *Cheliuskin* in 1933 and the Westbound voyage of the *Litke* this past season.

The Far Eastern Region covers an area of 3,068,300 square kilometers, about one-seventh of the entire area of the Soviet Union, and is exceeded in size only by the East Siberian Region. Its administrative center is Khabarovsk, a city of 102,000, situated 8,461 kilometers from Moscow, and its largest city is Vladivostok, with a population of 190,000. The population of the entire region has increased by about half a million since the census of 1926 and reached 1,860,100 on January 1, 1933. In addition to the Jewish Autonomous Area, the region includes the Amur and Primorskaya (Maritime) Areas, Kamchatka, the northern part of Sakhalin Island, the Nizhni-Amur district, and the Chukotsky, Okhotsky and Koriak national districts

Included in its boundaries is the most northeasterly point of the U.S.S.R., Chukotsky Peninsula, reaching out toward Alaska, off which the *Cheliuskin* was caught in the ice and whirled back northward after all but reaching the clear water of the Behring Sea. From the Chukotsky Peninsula the Far Eastern Region stretches down along the coast east of Yakutia all the way to Vladivostok, jutting out at one point into Kamchatka Peninsula. In the south the region borders on Mongolia, Manchuria and Korea.

Part of the territory now included in the Far Eastern Region was isolated from Soviet Russia through a long period of occupation by foreign troops (1918-22) during the latter part of which period it became the Far Eastern Republic. In 1922, upon the withdrawal of the last of the troops of intervention (the Japanese) it merged with the R.S.F.S.R., becoming its Far Eastern Area, and was reorganized into the Far Eastern Region in 1926.

While economic rehabilitation and expansion thus began later here than in other parts of the country, great advances have been made in building up this formerly quite undeveloped region. Great attention is being devoted to the exploitation of its very rich natural resources and the perspectives for its future development are enormous.

A Region of Extreme Climatic Contrasts

The nature of the Far Eastern Region is very rich in contradictions and contrasts. Sub-tropical forms of Manchurian flora live side by side with Arctic forms of vegetation. Tigers are found far to the North, along the Bureya and other rivers. At the same time the northern reindeer comes far down into the south, while the southern, spotted deer goes northward. For half of the year there is severe winter, when the temperature drops to as low as fifty below zero. For the other half there is hot summer weather. In winter and spring dry weather prevails. In the summer months there is a high degree of moisture.

These sharp atmospheric contrasts have occasioned swift changes in plant and animal life and in the structure of the earth's crust. A process of violent and swift accumulation of deposits is observable in the Far Eastern Region. Everywhere huge masses of peat and coal are encountered. They lie in great strata at literally any point in the region and fuel is thus guaranteed for any future industrial project.

Equally violent are the changes that have taken place in the deeper strata of the earth. Great volcanic and tectonic processes have to a large degree affected the geological structure of the region and have been responsible for the formation of the Khingano-Bureinsk geo-chemical concentration. Such concentrations provide natural centers of raw material for future industry. The numerous beds of the most various types of ores are frequently deposited in huge masses. In view of the great deposits of coal and iron it has been decided to establish a metallurgical combine right in the center of this concentration. The known reserves of coal here amount to 200 billion tons, and there are estimated stocks of two billion tons of iron ore. The Khungari coal deposits are 80 kilometers from the town of Komsomolsk and the billions of tons of Mukhen brown coal are 80 kilometers from Khabarovsk.

The coal, conveniently situated in the coastal belt from Vladivostok to the North Arctic Sea, guarantees a plentiful supply of fuel for the Northern Sea Route from Vladivostok to the White Sea, for maritime transport on the Pacific Ocean and the fishing fleet of the Far Eastern Region. In many districts--on Kamchatka, on the Okhotsky coast, on Sakhalin, etc., there are billions of tons of excellent coal.

Iron ore, like coal, is to be found almost everywhere in the region. It is abundant in the Primorskaya area, along the Amur, along the railroad lines, both those in operation and those in construction to Kamchatka and Anadyr. In many places there are huge stores of copper, silver, arsenic, manganese, tungsten, vanadium, tin, molybdenum, lead and many other metals.

About ten million tons of semi-metallic ores, billions of tons of graphite, enormous stores of building materials, 23 billion cubic meters of volcanic pumice and large quantities of gold have already been discovered in various parts of the region—from the southernmost point to the extreme northern section.

In addition, great reserves of high grade oil have been discovered on Sakhalin Island, where the oil output is expected to reach 800,000 tons by 1937. The development of oil production in the chief oil-bearing areas of the region itself will soon be undertaken. Kamchatka contains enormous supplies in both its extinct and its active volcanoes. The hot springs of Kamchatka and other sections of the region are also awaiting exploitation. The temperature of these springs reaches 100 degrees. Some of the waters create natural hotbeds and as a result there are areas of eternal green amid the snows and severities of winter. The medicinal springs of the region are considered in no way inferior to those of the Caucasus.

Geological Surveys Increasing Known Mineral Wealth

Up to the present time about one-third of the entire territory of the region and the entire coastal section have been carefully surveyed. During the second five-year plan it is expected to eliminate completely all the remaining " white spots " (unexplored areas) on the geographical map of the Far Eastern Region. Previous to 1932 from ten to fifteen geological exploring and prospecting groups went annually to the Far Eastern region. These groups usually had among them several dozen small hand boring machines, and included from twenty to thirty engineers and technicians and from 200 to 300 workers. Beginning with 1932 over 300 geological groups have been working each year in the Far Eastern Region. They have been equipped with 70 mechanical and 80 improved hand drills and have numbered some 350 engineers and technicians and about 4,500 workers. Appropriations for geological work have grown to 12—15,000,000 roubles a year and the extent of the work accomplished correspondingly.

As a result of this exploration work the known stocks of coal in the last five years alone have grown more than sixty times, the known iron reserves 64 times, and non-ferrous metals, 1,700 times. During this period over 400 new beds of different minerals have been found and great quantities of rare metals discovered the existence of which was quite unknown previously.

Along with the rapid development of the old centers in the Primorskaya District and along the Amur, cities, factories and whole new industries are growing up rapidly in the new districts. New industrial centers have been developed in Khabarovsk and Komsomolsk-on-Amur, opening up the whole lower Amur as a

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**Economic Review of the Soviet Union.*

new cultural center of the Far East. An important industrial center has been established in the Khingano-Bureinsk district on Kamchatka. In the near future exploration will be started in the basins of the Zei and Selemdzhi rivers where there are known to be countless riches. The Baikal-Amur Railroad lays the basis for the development of a great industrial and cultural belt in the upper basins of the Zei, Selemdzhi, Bureya and Lower Amur rivers and also in the north Sikhota-Alin mountain section.

The extensive network of rivers in the Far Eastern Region opens up tremendous possibilities for river transportation. It is provisionally estimated that about 36,000,000 h.p. of potential hydro-electric resources are contained in these rivers. Railroad construction is developing. The Northern Sea Route, maritime transport, the building up of air transport and railless roads in addition to the river system will make the riches of the region accessible for distribution and make further development of its resources possible.

Timber reserves of the region amount to 6 to 8 billion cubic meters with a natural annual growth of upwards of 100 million cubic meters. There are three vegetation zones found frequently in one and the same district—the Manchurian, Daursk and Okhotsky-Kamchatka. Among the Manchurian trees are several very valuable varieties—cedar, ash, oak, hard birch and others. A large area is covered by larch (Daursk) which has great industrial value. The timber resources represent great construction and export potentialities and provide an inexhaustible source of raw material for the paper and chemical industry which is being developed in the second five-year plan. Formalin, alcohol, pitch, cellulose, different types of oil and many other products will be derived from the lumber resources.

A wild silk-bearing mulberry tree, which penetrates far to the north, is to be found in the region, wild grapes are also prevalent which can be used for wine and are quite edible. Experience has proved the entire practicability of cultivating these grapes. There are other important possibilities for horticultural development in this section and many successful experiments in hybridization of fruits have been carried out.

The Far Eastern region abounds in fish. Through scientific research the periods of development and the movement of schools of different types of fish in the seas and rivers have been ascertained and fish and crabs are being caught in increasingly large quantities. The possible annual fish catch of the region is estimated at 2,500,000 tons. The actual catch at the present time amounts to about 16 per cent of that figure. Throughout the whole area from Lake Khanka to the Amur River there are colossal quantities of oysters, molluscs and shrimps which have great importance for fertilizer in agriculture and perhaps for export purposes. There is also a special kind of valuable turtle which may also become an important article for export.

Of great economic importance are the resources in fur, sea and forest animals, including some of the rarest of the world such as polar fox, sable, ermine, fur seal and others. With adequate organization, these resources would be practically inexhaustible. The reindeer of the north and the spotted deer of the south furnish excellent means of transportation as well as in themselves providing valuable industrial resources.

Agriculture in the Far East

The agriculture of the Far Eastern Region began its development first of all in the Zei-Bureinsk valley, with its center in Blagoveschensk. While in this district there is a fertile soil and favorable climatic conditions it is not considered that it is necessarily the best from the point of view of the prospects for future development. The district of the Western slopes of the Sikhota-Alin mountains, from its central section to Komsomolsk, Khabarovsk and almost to Amguni may represent an equally or possibly even more favorable area for agricultural development. There is in this district an unlimited amount of virgin land which can be worked even by extensive methods. However, this method is not a reliable one, and in order to establish a large-scale, mechanized modern type of agriculture, free of complete dependence on weather conditions, extensive reclamation and agro-technical improvements are already under way. The exemptions in taxes and grain quotas granted in 1933 to peasants settling in the territory has been an additional factor stimulating the growth of agriculture.

Several years' experience of collectives and state farms have demonstrated the practicability of growing vegetable gardens almost up to the extreme north and along the upper reaches of the Zei and Bureya rivers, even under conditions of everlasting ice. It has proven possible to grow water-melons, canteloupes and tobacco. The collectives of these sections have also shown the profitability of livestock raising. There is now not a single collective member, even among the native population, who has not a cow of his own. At the Bomnak scientific station on the upper Zei dozens of scientific workers have carried on vast experiments in demonstrating the possibility of growing vegetables and grain in sections where the ground is continually frozen. This year the station has been granted by the local government an area of 3,500 hectares to further its experiments. Soy beans, rice, sugar beets, bast, are among the other crops being developed.

In addition to the economic program for the Far Eastern Region, emphasis is being laid on the improvement of health conditions and the raising of the cultural standards of the population. During 1934 hospital facilities have been extended by the addition of 1,100 beds and the number of doctors and nurses practicing in the region has been greatly increased. An extensive program of construction for health protection purposes has been undertaken. The plan includes a large medical institute at Khabarovsk, epidemic and bacteriological institutes, a medical high school and a pharmaceutical college. Six million roubles has been assigned for the building of a large city hospital in Khabarovsk and a large program of hospital construction will be undertaken in the other towns of the region, and in the rural districts and factory settlements as well.

Extensive school building construction will be carried out during 1935 for which over 10,000,000 roubles have been assigned. Eighty-five new day schools are to be built and sixteen boarding schools. Social buildings for housing teachers will also be erected.

In 1935 a normal institute for 600 students will be built in Khabarovsk with living quarters for the students. Normal high schools will be erected in Vladivostok and the village of Novo-Kievsk. It is planned to build a House of Culture in Khabarovsk and sound film theaters in various towns of the region.

The New Train "Asia" Goes Into Service

(Continued from page 56)

train; that of 7.5 tons in capacity is installed in the second and third class passenger cars and that of six tons in the other cars.

With regard to the arrangement of all the apparatus, the refrigeration unit, the cold water drain tank, the cold water pump, the cold water spray pump, the purge ejector and the make up water tank are installed beneath the floor, and the air conditioner and its accessories above and inside of the ceiling of the lavatory and the wash-room.

An air conduit is buried within the upper deck of the ceiling of the passenger sections and the conditioned air is sent out through air grills which are fitted into the surface of the upper deck. The returned air grill is installed in the ceiling right underneath the conditioner, and the fresh air grill in the ceiling of the vestibule except in the case of the dining car where the fresh air is taken in through the roof.

The switchboard and the gauges are placed either in the wash-room or the steward's quarter, on top of the ceiling of which is installed the air conditioning equipment. All the passenger sections are equipped with a hygrostat and a thermostat which automatically adjust both the temperature and humidity of the rooms.

Electrical Equipment

In each one of the trucks is attached an eight kilowatt generator which works by means of a gear connected directly with the axle. Batteries are of 25 plates exide type and 24 of them are arranged in the double battery system.

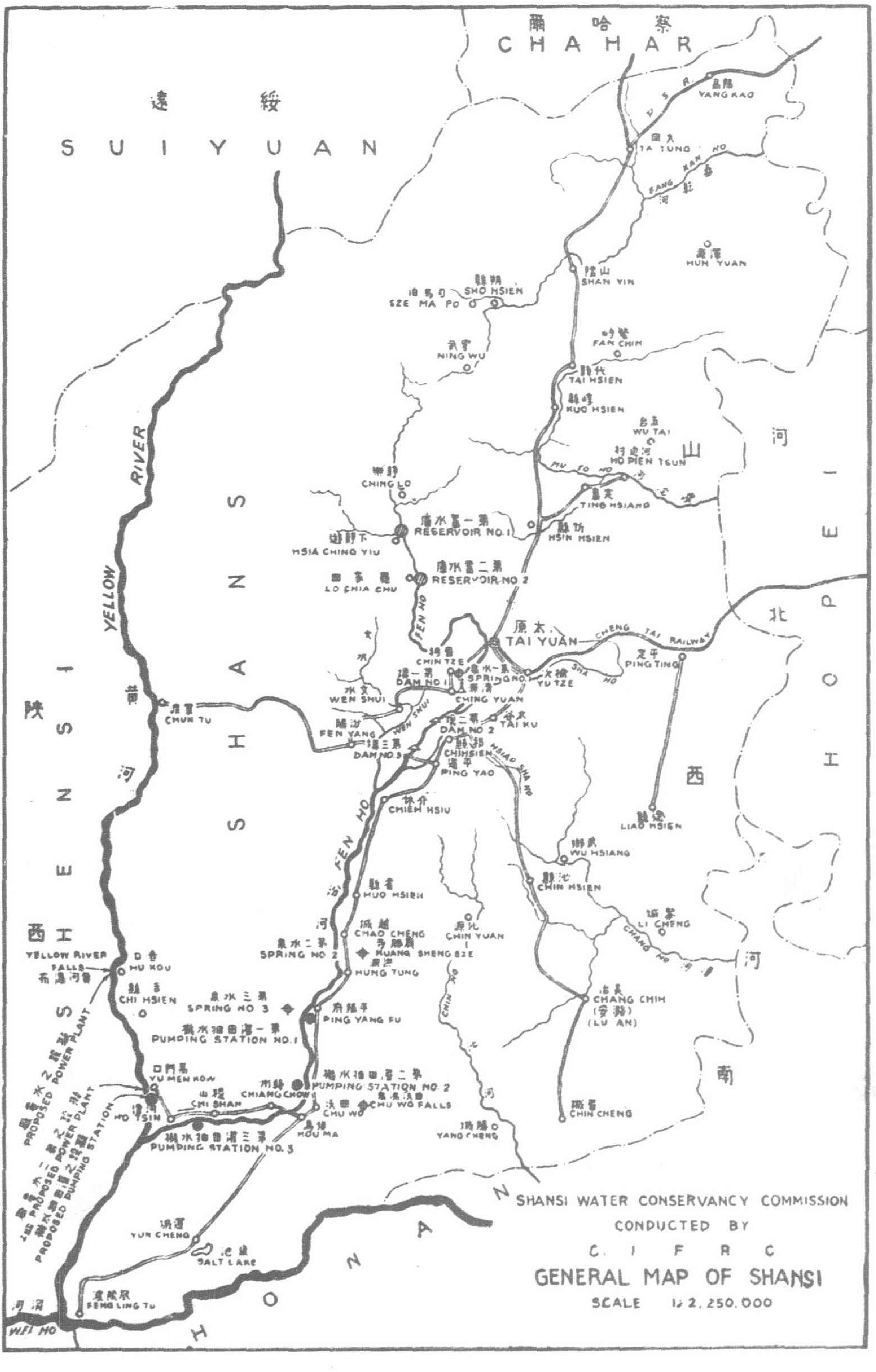
Four Rivers of Shansi

Preliminary Report of China International Famine Relief Commission Made in Connection with Possible Improvements to Irrigation

By O. T. TODD, Chief Engineer, China International Famine Relief Commission

In January of last year a Preliminary Fen Ho Report was issued showing the findings of the Fen Ho Conservancy engineers up to the close of 1933 and recommending a plan for handling the problem of water conservancy for irrigation as well as flood control on this river. Further studies have been made of the Fen Ho during 1934 all of which confirm the general conclusions as given in this first report. Additional data gathered during the past spring and summer show where certain revisions on estimates are desirable, particularly in the matter of flood control costs. It appears now that quarries can be opened sufficiently close to the Fen Ho to considerably reduce the cost of rock revetment work.

The purpose of this Report is to review the studies made on four other rivers in Shansi that are of less importance than the Fen Ho. These rivers are the Hu To Ho, Sang Kan Ho, Chang Ho and Chin Ho. The surveys of the first two have been much more extensive than those of the next two since advance inspection showed plainly their relative importance toward the problem of water conservancy within the province. The Sang Kan Ho surveys were begun in late 1933 and ended in August, 1934. The other three rivers were studied in the spring and early summer of this year. Neither funds nor time permitted of as far reaching studies on these four rivers as have been made on the Fen Ho. But the inspections and surveys made enabled the Conservancy engineers to determine the relative importance of these several river problems in dealing with the whole subject of food supply for Shansi. These rivers will be discussed here in the order of their importance to Shansi.



Organization and Financing

The work of investigating these four lesser rivers was conducted by the Fen Ho Conservancy engineers under my general direction with funds supplied by the Shansi Water Conservancy Commission. Survey parties were shifted from Fen Ho studies to these other river studies as the general program permitted. The work was carried out with the same degree of care as on the Fen Ho and the topographical surveys and mapping were done under the same direction. The cost of these studies has been approximately $30,000 while the total Fen Ho studies have cost $80,000 and the Hu-kou fall studies with connecting roads cost nearly $10,000. Thus a total of $120,000 has been furnished by the Provincial authorities of Shansi to finance the field studies, mapping, calculations and report printing of the whole water conservancy program of the province as far as it has been studied from February 1933 to date.

This work has developed some good staff that is valuable to the province in the work of carrying any of the proposed improvements through the construction stage. The Chief Engineer has been loaned from the China International Famine Relief Commission while a full staff has been developed working under the Commission's rules. The financing of this work by Shansi Province and the fine co-operation given to the China International Famine Relief Commission by all Shansi officials mark a particularly happy epoch in relations of this sort, where the Commission has been called to aid a province in famine relief or prevention problems. It bespeaks most friendly and satisfactory future international relations in development work in this section of China.

The Sang Kan Ho

The region just to the north of Yenmen Pass on both sides of the motor road is comparatively level, being a great plain extending north to Tatungfu and beyond. It is traversed by the Sang Kan Ho and its branches that rise in the mountains to the west, one of the sources being a spring of 90 second feet capacity at Sze Ma Po, Shuo Hsien, and another being a stream flowing out of the hills past the famous Yun Kang cave temples 10 miles west of Tatungfu. This region of flat table land or plains extends to the east beyond the city of Ying Hsien. In this area, upper part of the [illegible] five irrigation companies have already operated for a number of years, one dating back twenty years in its operations, the Kuang Chi Company. These irrigation works of a native type have used the natural flow of the Sang Kan Ho to more or less advantage during the past ten to twenty years and have increased the yield of farm crops in this region. However, the system has not been well maintained on the whole and a spirit of pessimism prevails among the farmers and the investors in the companies.

Poor Quality of Lands

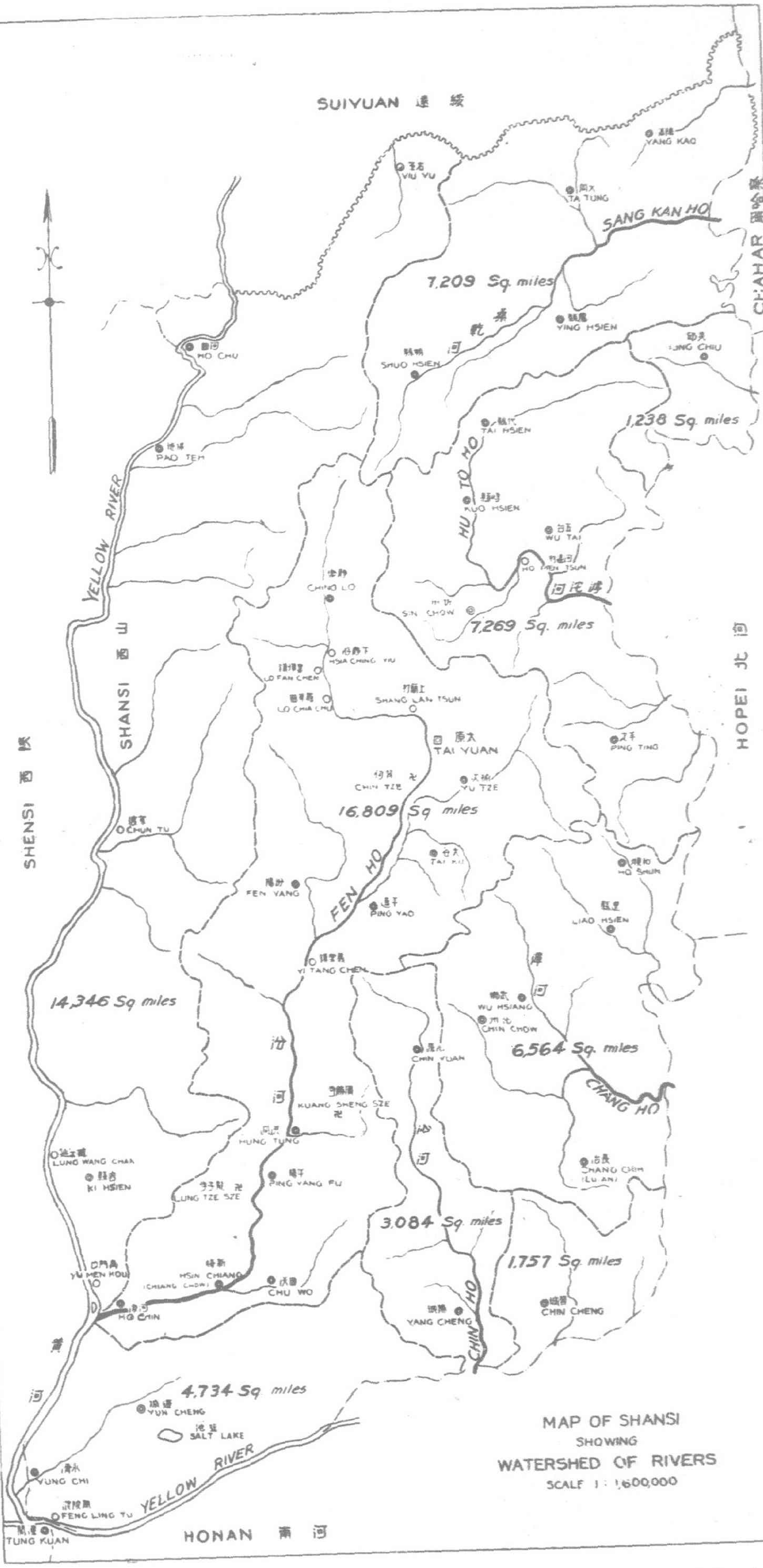
Our engineers find that large areas of this plain consist of lands with much alkali content. Other sections are sandy. On the whole the land is not by any means as good as that south of the Pass. Also, the temperatures are cooler, and more strong north winds bring in sand and dust and cold winds to make farming less profitable. In consequence, lands through here run as low as 50 cents per mou in price. Not much of this area is valued as high as $10 per mou. Some of the land is practically without value and merely used for pasture.

Silt Cover Needed to Make Fields Fertile

One or two of the old irrigating companies tried to reclaim these worst lands by flooding them with muddy waters in the summer. In this way it was hoped to get a mud coat of several inches depth on top of the alkali soils. This has succeeded only in a limited degree. Our investigations indicate that with suitable intakes and check-gates it is quite possible that much of this low priced land west of the motor road may be made valuable for farming after three or four years. Silt deposits placed on the land by irrigating with summer flow are of the greatest importance. Watering poor soils is of little use.

Drainage Needed to Wash Out Alkali

Then, in much of the low lying lands near the river, capilarity due to over-irrigation has brought alkali to the surface. A suitable system of drainage is necessary to wash out this alkali that has been gathering near the ground surface. This trouble has likely been increasing the past ten years on account of lack of competent supervision by qualified engineers over this whole problem of irrigation and land improvement.



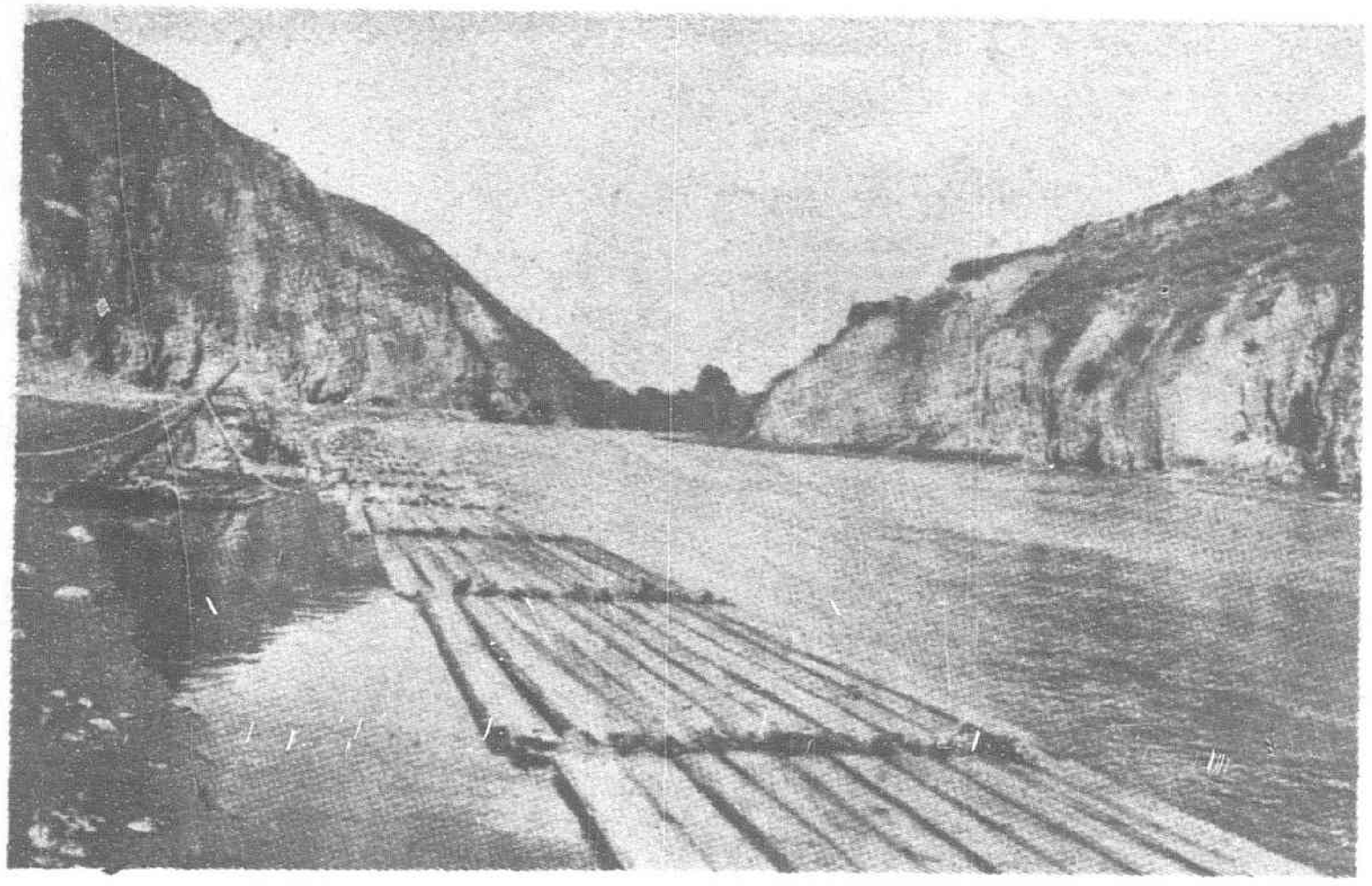
MAP OF SHANSI
SHOWING
WATERSHED OF RIVERS
SCALE 1 : 1,600,000

Better Transport Needed

Aside from the main motor road coming over the Pass and going past Taiyoh to Tatungfu, there is not suitable transport in this country. All other roads are typical country cart roads, that are muddy when it rains, and are not graded or surfaced. There are almost no bridges at all. This condition adds further difficulties to farming, making crops of less value due to cost of haul to a market 50 miles north at Tatungfu.

Headwork Improvements and Canal Rectification

Though hydrographic information is very scarce and only one summer's gagings of this river are available for our use it is



The Fen Ho at Lantsun in low water, at lower end of Gorges above Taiyuan plain

Headworks of Kwang Chi irrigation canal leading from tributary of Sang Kan Ho east of Ying Hsien

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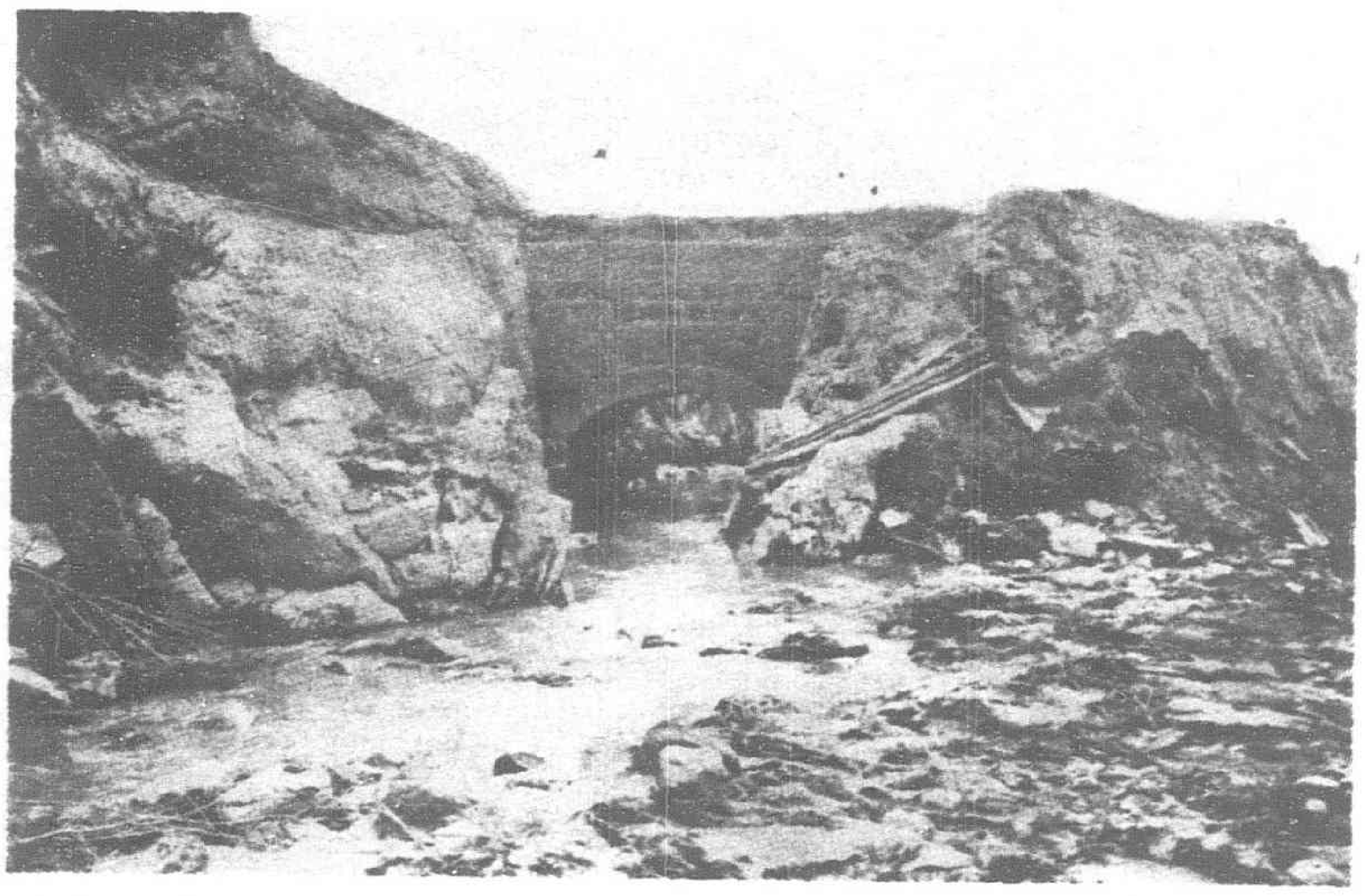
possible to lay out in the coming spring the diversion dams, intake-gates and check-gates, that are required to make these canals function better than in the past. [From the surveys completed this past summer, such improvements will be designed and recommended to the companies now handling this irrigation work.] Cost estimates on these structures have not yet been completed.



Where Kwang Chi Canal takes water for irrigation from tributary of Sang Kan Ho east of Ying Hsien

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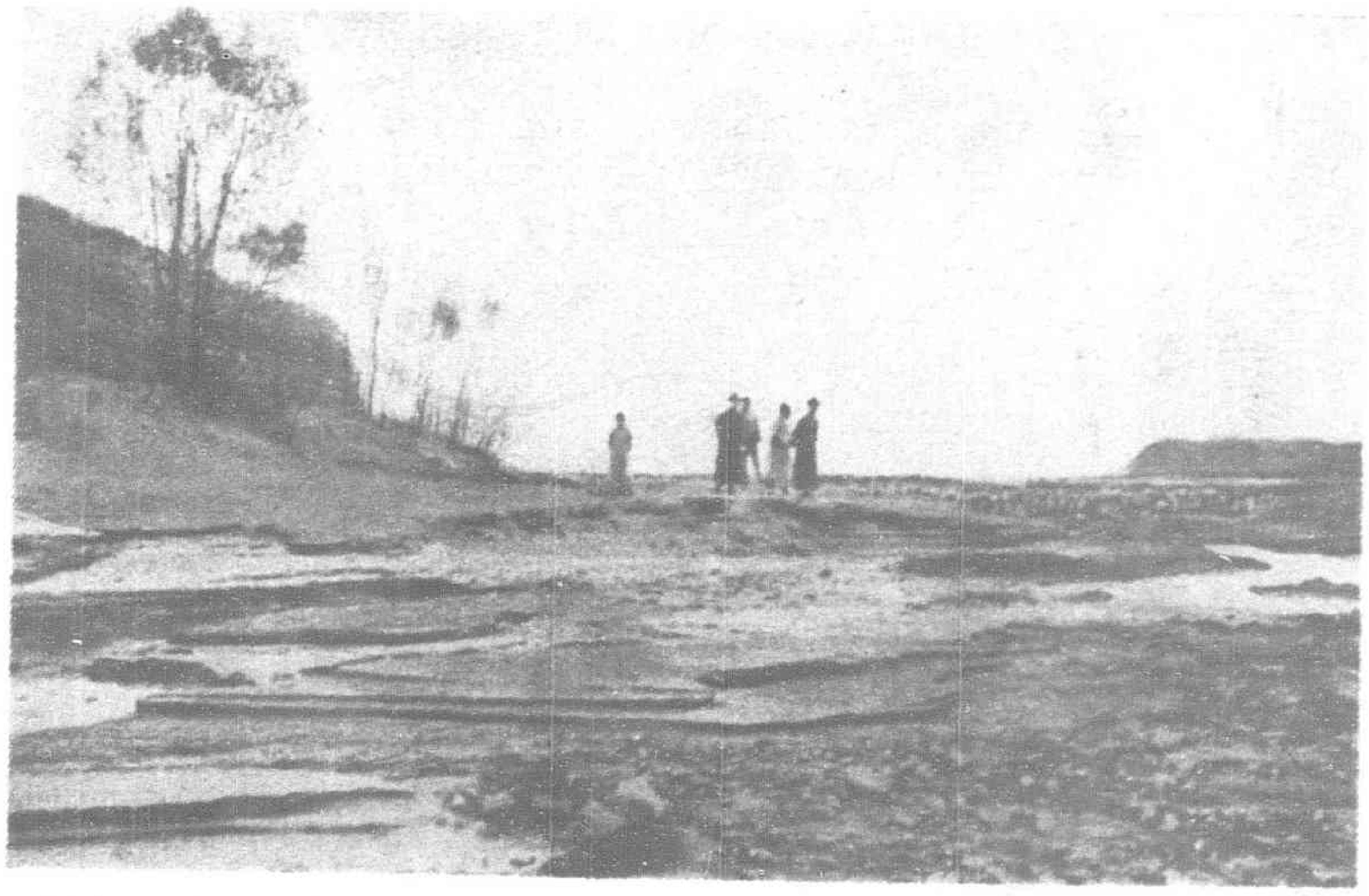

Native river diversion for irrigation on tributary of Sang Kan Ho east of Ying Hsien

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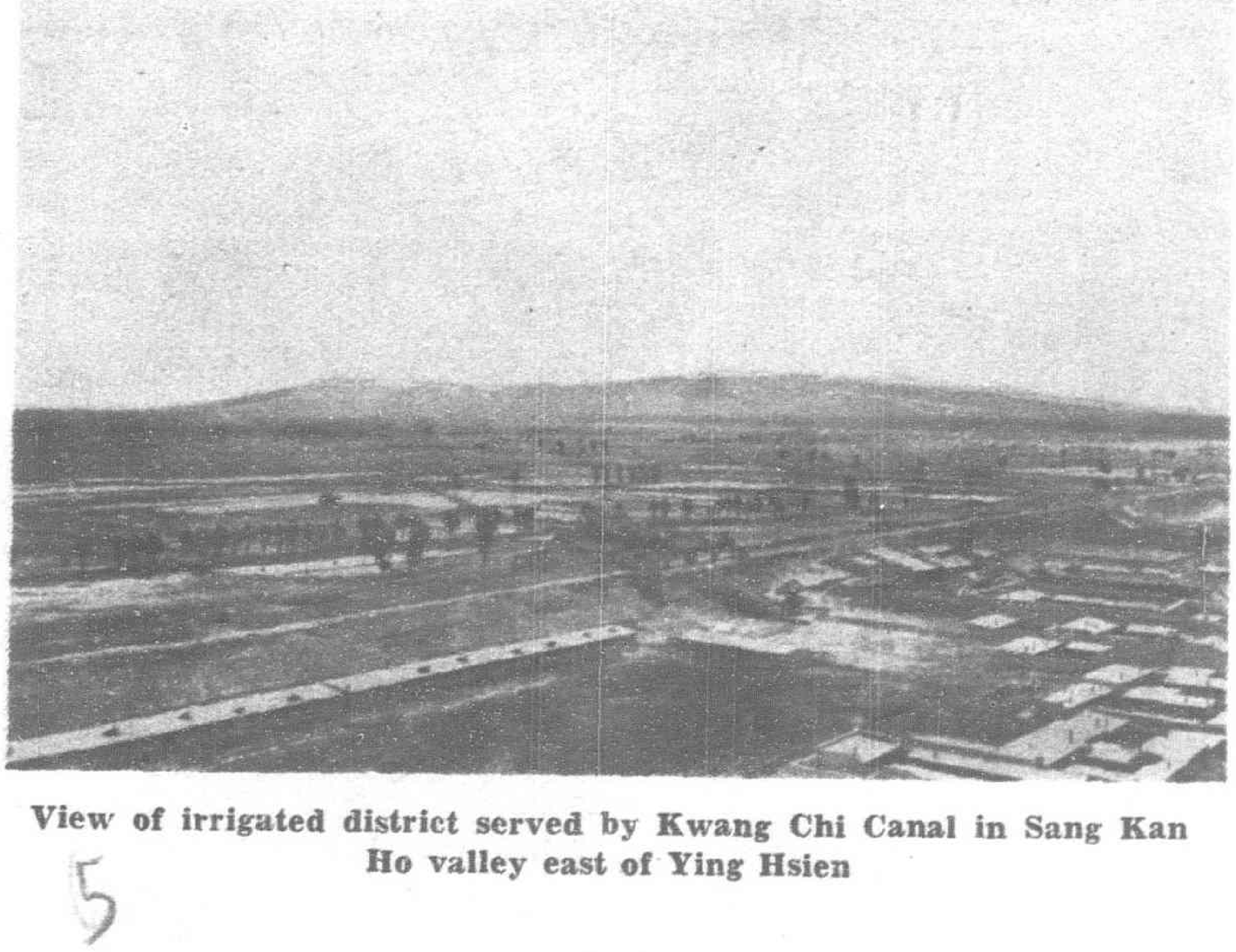
[Though a total of $1,800,000 has been expended by the various irrigation companies in this region in digging canals and building rather insecure dams, weirs and gates, it is evident all through that the engineering has been poor.] There is no such thing in the region as a masonry drop or a check-gate. Hence, some of the large canals put on grades that were too steep have dug themselves as deep as 20 feet to 30 feet. This is true of the southern canals from the Hui Ho, a tributary of the Sang Kan Ho from the southwest. There is no diversion dam and no suitable intake gates. This is the oldest canal group of the region. Until better and more intelligent management is placed over this work it seems unwise to commence rehabilitation. [Much can be done to improve this Sang Kan Ho plain under capable leadership. A detailed plan is to be proposed after more thorough study of all available data.



View of irrigated district served by Kwang Chi Canal in Sang Kan Ho valley east of Ying Hsien

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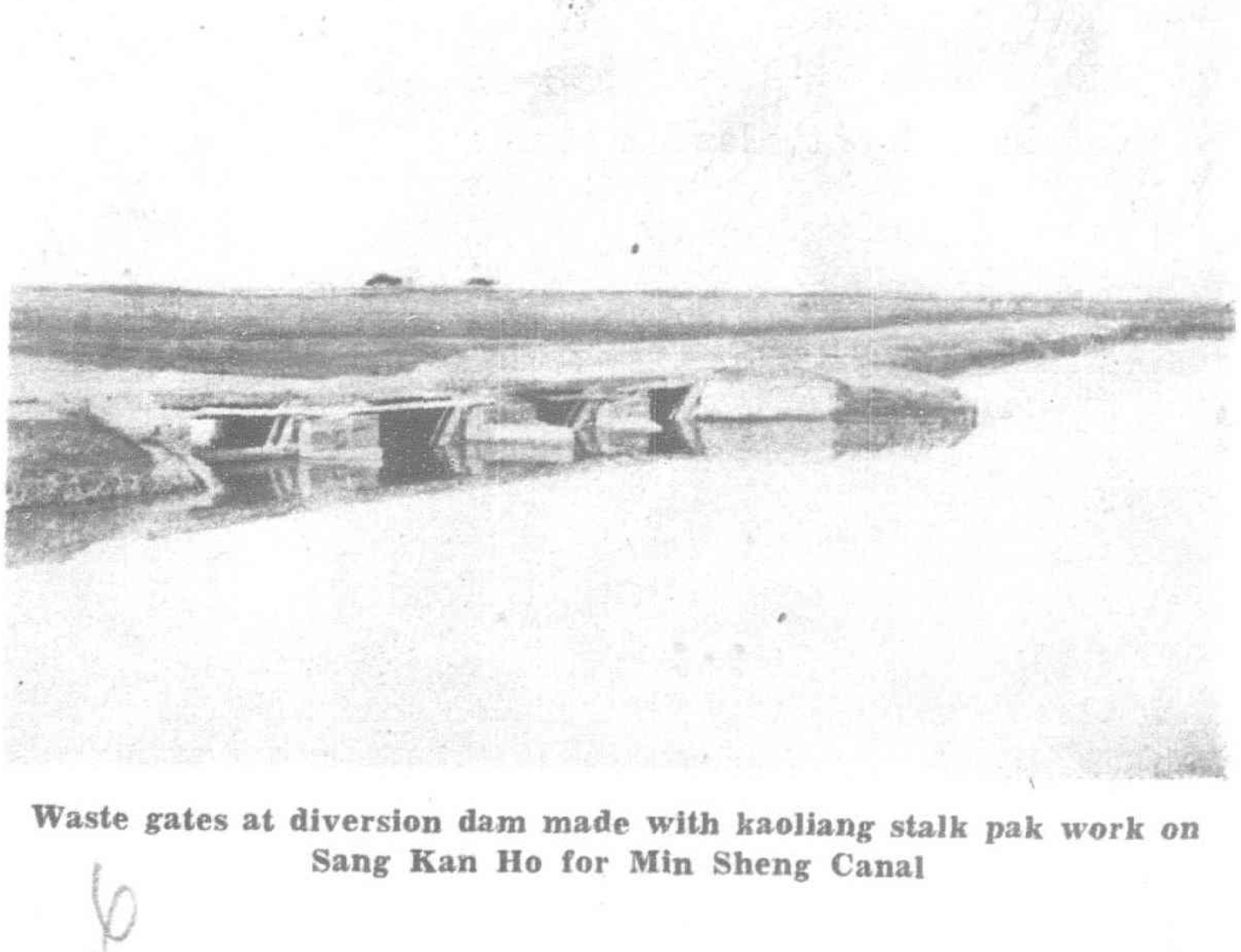

Waste gates at diversion dam made with kaoliang stalk pak work on Sang Kan Ho for Min Sheng Canal

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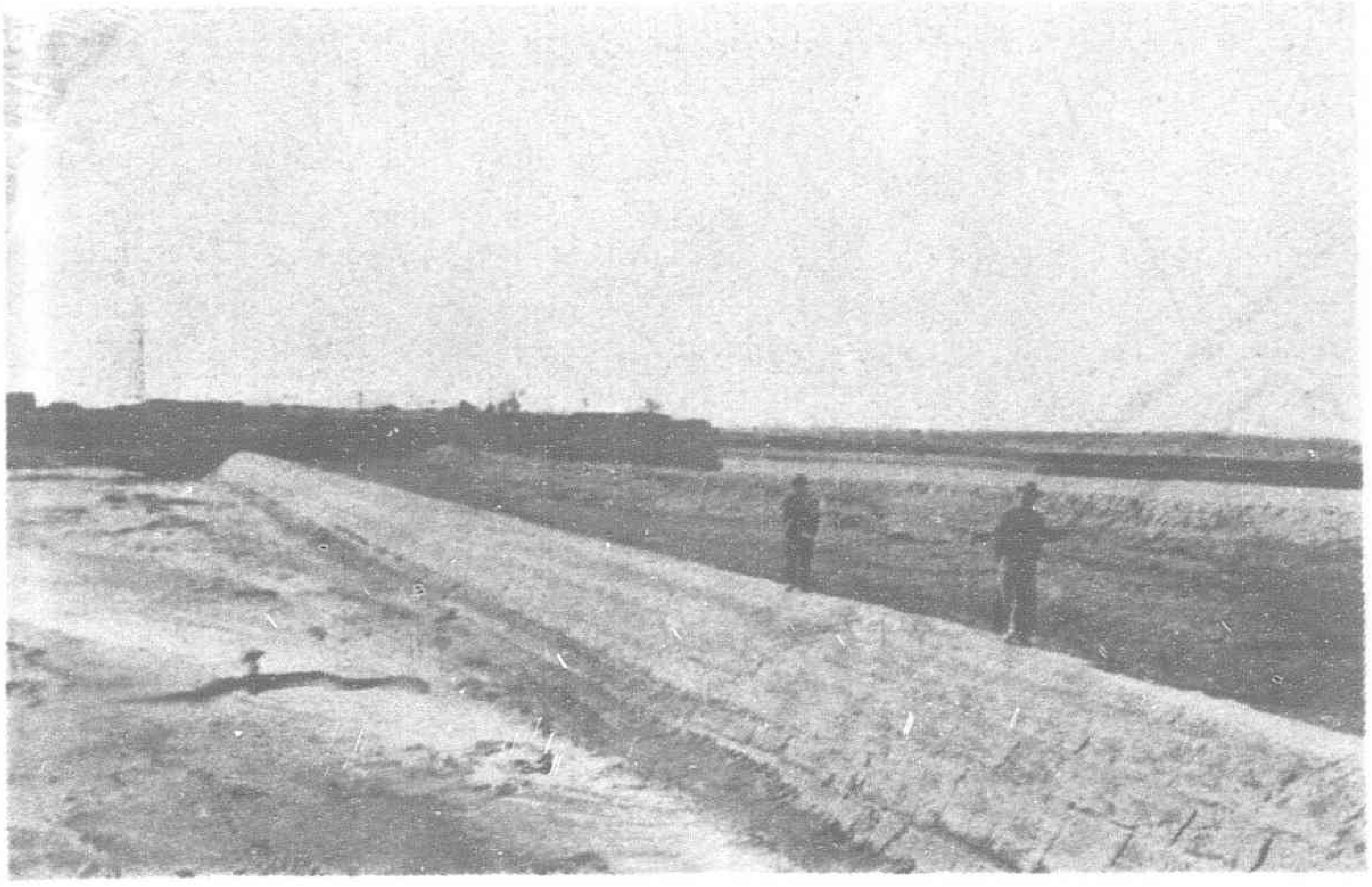
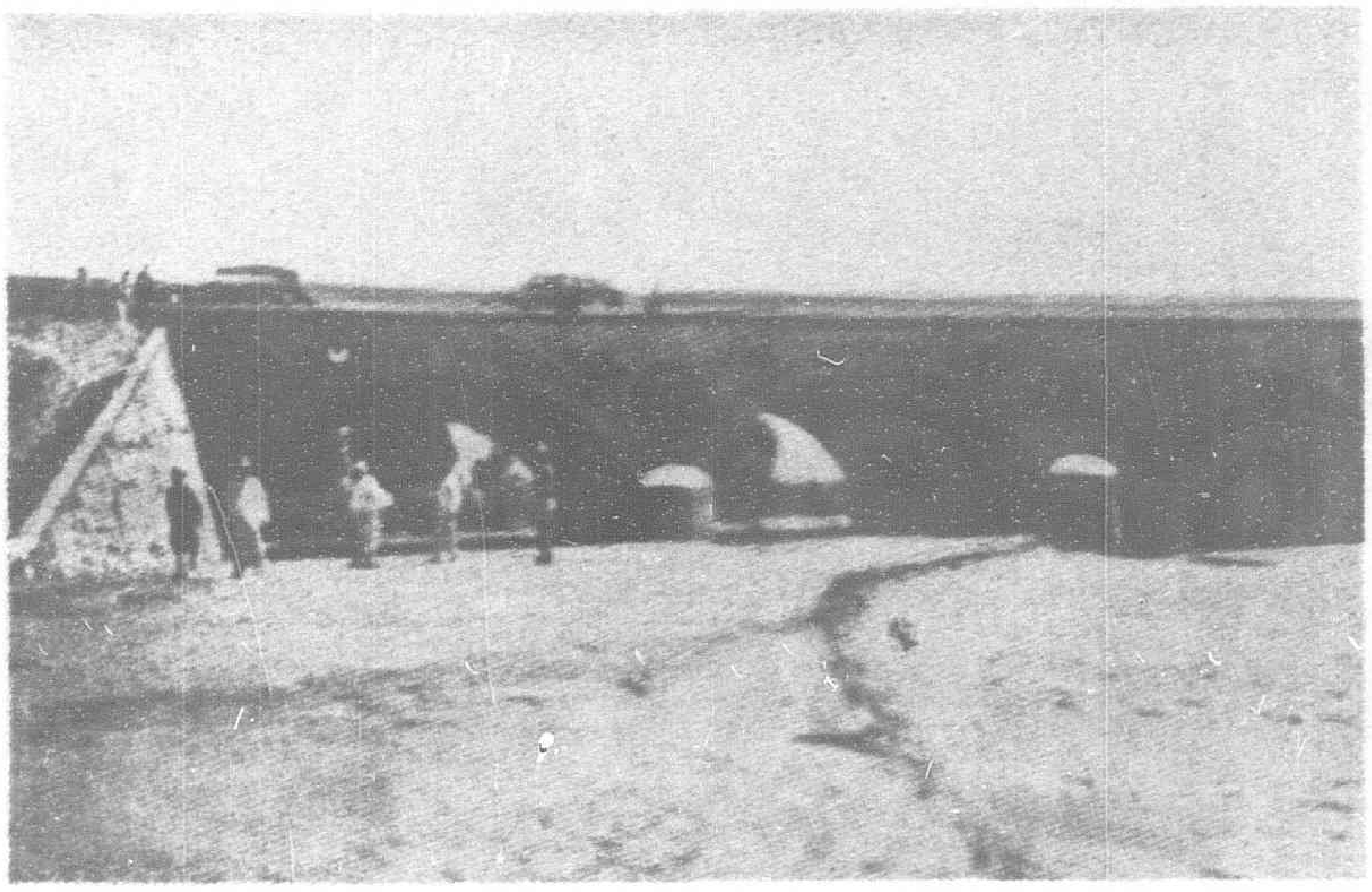
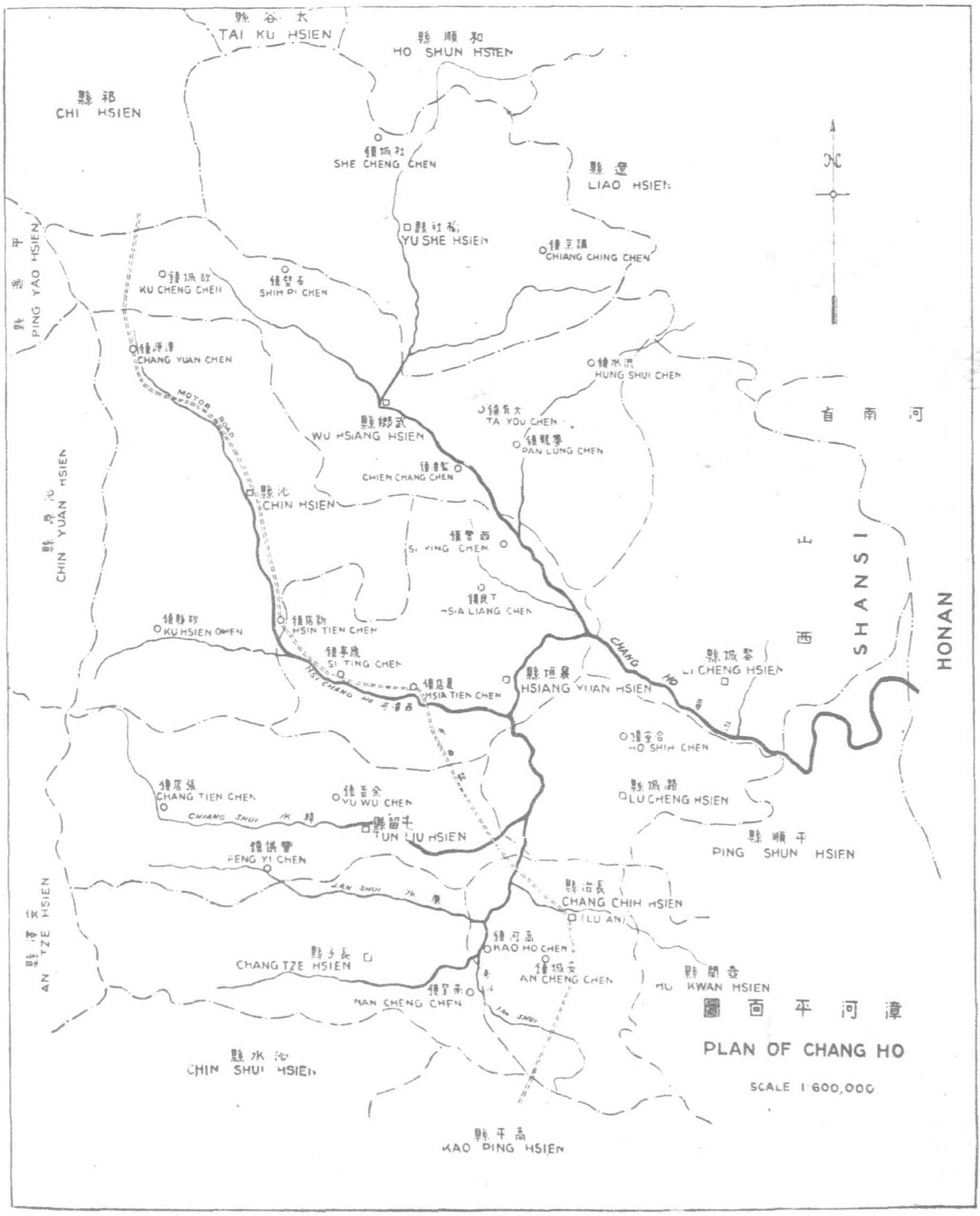


Spillway on Hui Ho (branch of Sang Kan Ho) at intake of Kwang Yu irrigation canal west of motor road



Aqueduct near Hopien for irrigation canal tapping Hu To Ho



漳河平面圖

PLAN OF CHANG HO

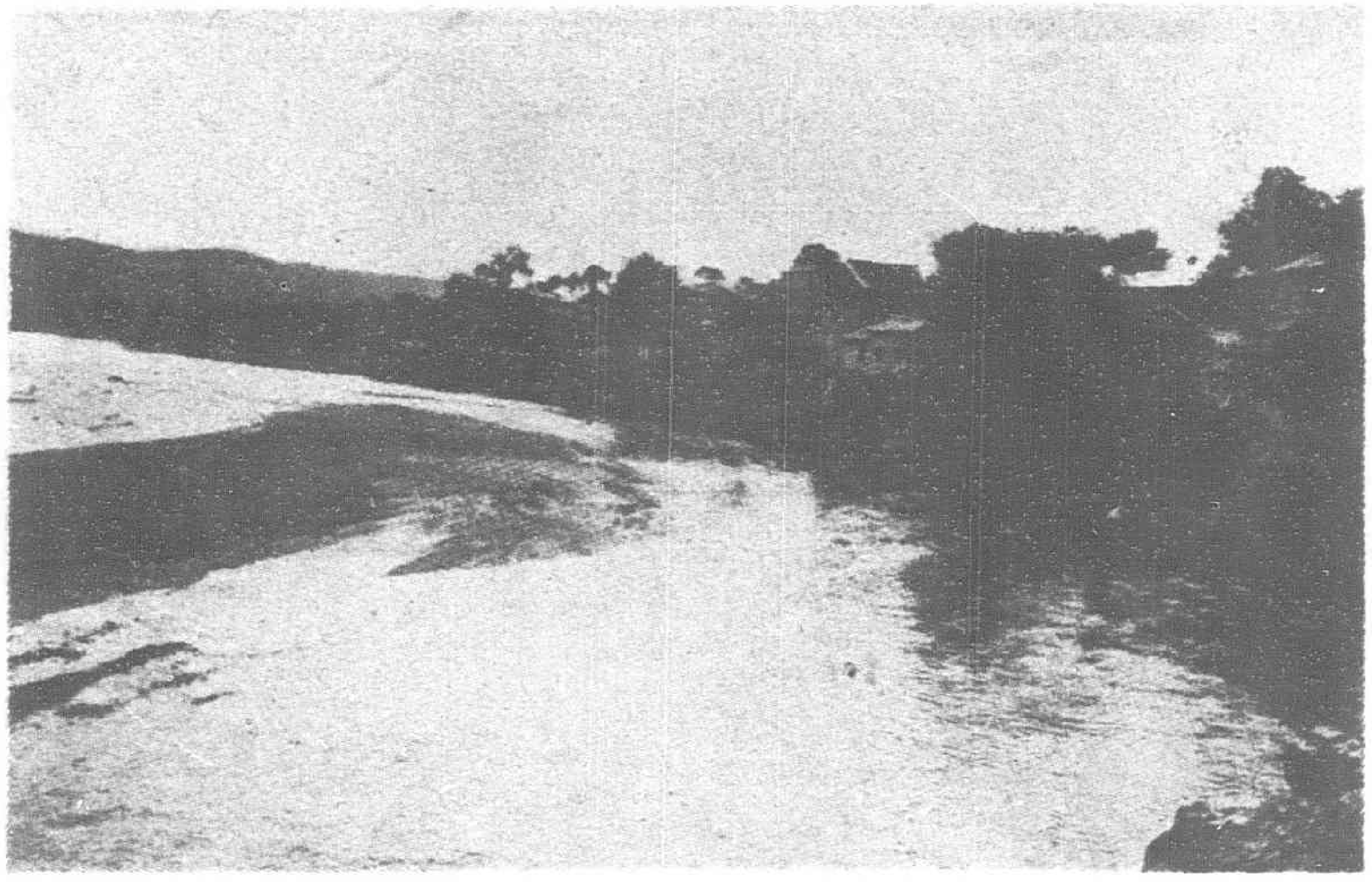
SCALE 1:600,000

The Hu To Ho

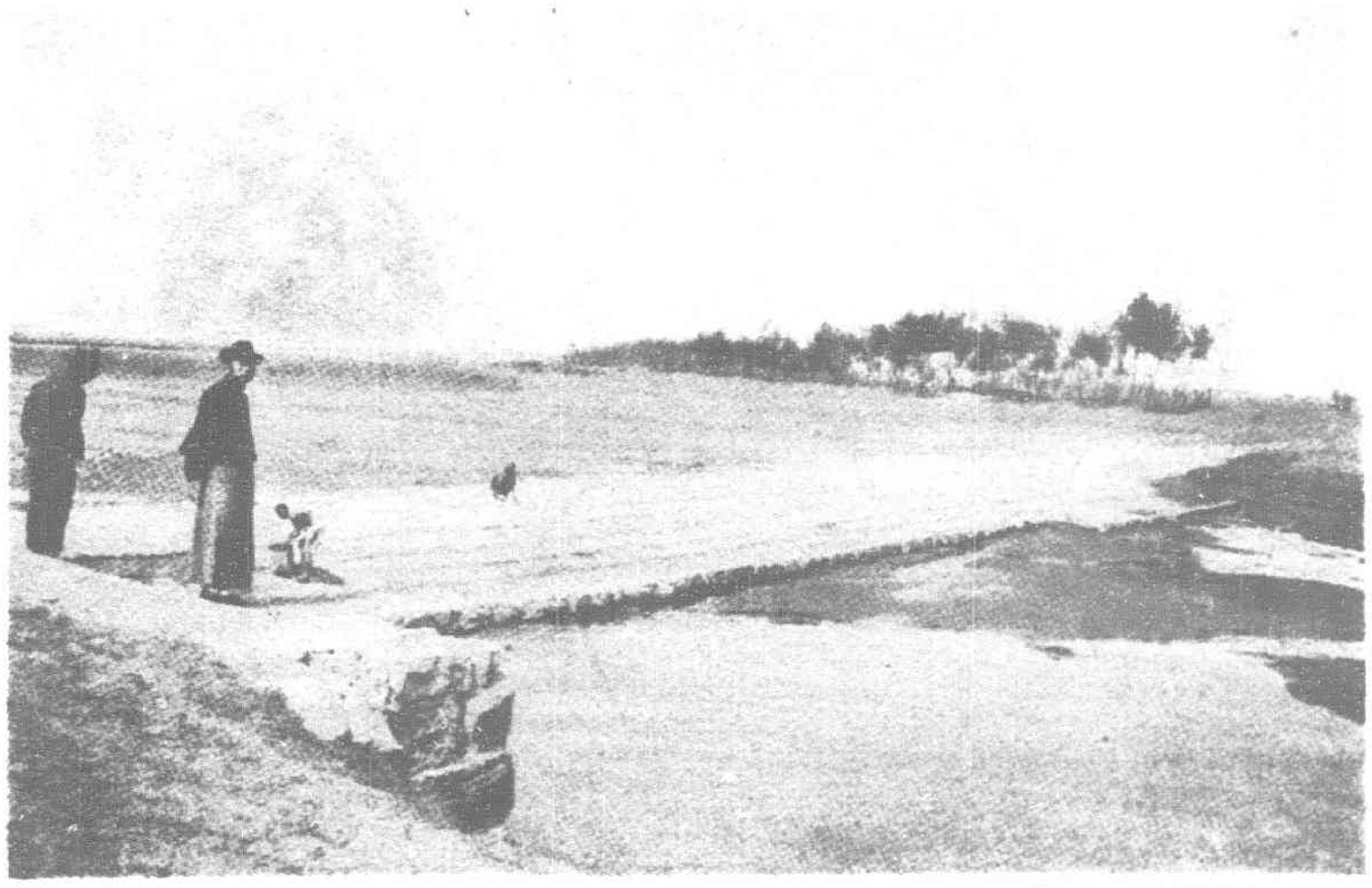
This river drains much of the water-shed of central Shansi lying south of Yenmen Pass and east of the Fen Ho. It flows near to Sinchow and then turns east past Hopien and south of Wutai Shan through mountain gorges into Hopei Province north of Shihchiachwang. Near the latter point its water is used for irrigation to considerable extent. Our problem, however, has to do with the upper waters of the Hu To Ho and chiefly the area centering around Sinchow and the region between there and Hopien and north.

Surveys have been made during the past spring showing the extent of canals for irrigation in the Hu To Ho valley from Hopien up river to the foot of the mountain near Tai Hsien. Though seven possible dam sites have been located for small storage there is no ideal storage of consequence for catching winter flow. Some of these minor reservoirs may prove of service, however, and further study of the problem is warranted. At present, by the usual native system of diversion of the natural flow of the river, without the use of dams, most of the low water flow of this river is utilized for irrigation. In the spring, the river near Sinchow and Hopien becomes almost, if not entirely, dry due to the diversions made up stream. It appears that the problem on this river is to get enough storage for winter flow to supplement the low spring flow, in order to augment the very limited supply of water available for irrigation in April, May and June.

Our field studies have not offered much encouragement in the storage line. It will be fairly costly as compared with storage on the Fen Ho. But farm lands in the Sinchow-Hopien area are



View of the Chin Ho at Jencheng, 65 li west of Chincheng in low water season, June, 1934



Weir for diversion of Sang Kan Ho water into Fu Shan Canal west of motor road

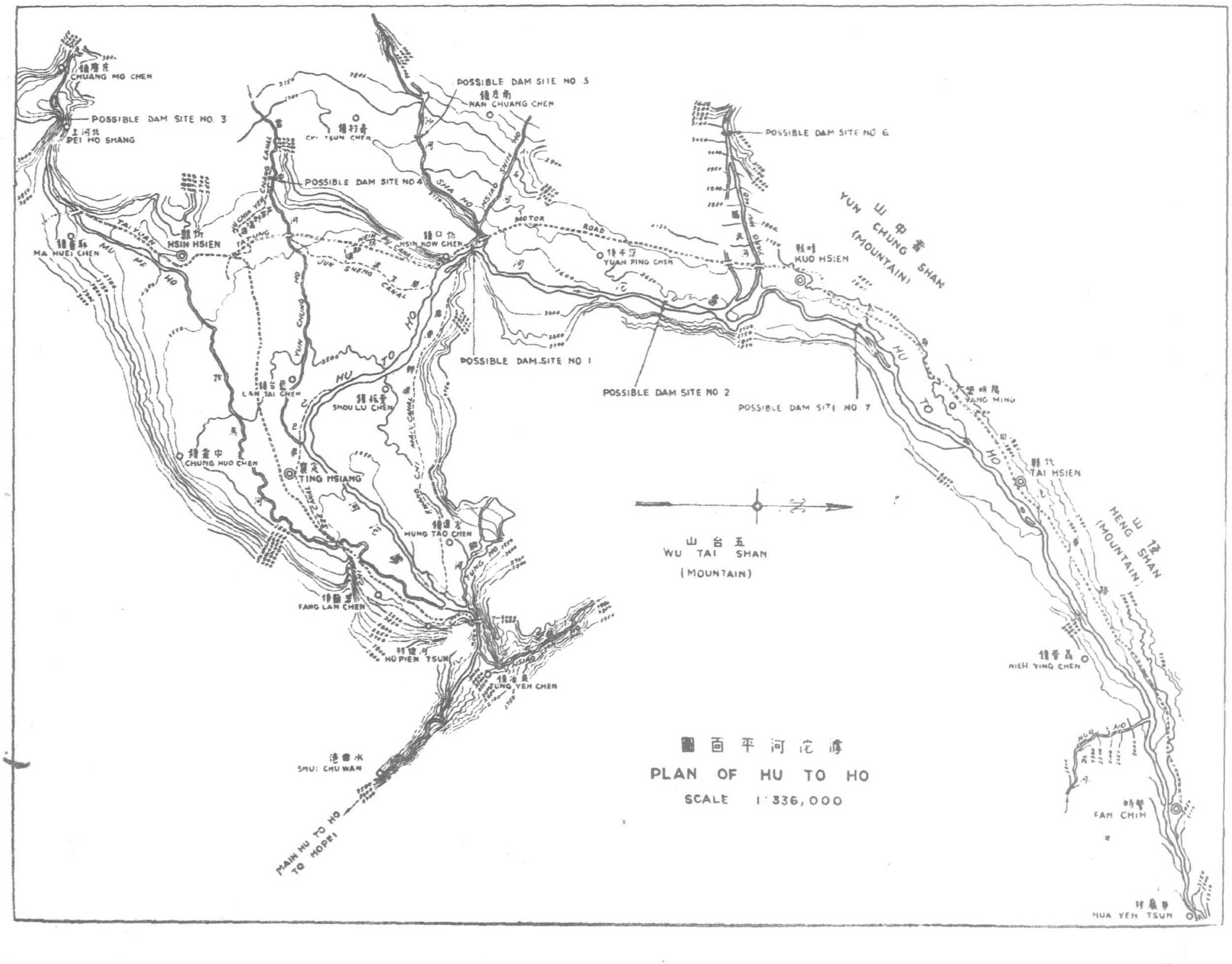
valuable and need water. It is, therefore, thought advisable to make more careful studies of all possible storage sites and also to improve diversion and have regulation gates.

This river carries a heavy silt load in the summer. The silt laden water is valuable to the land. It has doubtless had much to do in maintaining high productivity in the fields along its course.

Discharge measurements have been taken through the past summer, but no back data can be found in this line of investigation. Further study is required before actual construction of improvements can be recommended. No competent engineer seems to have ever been assigned to this work in the past. All irrigation work has been of the primitive type where the crudest methods are used. Yet the low water flow of the upper Hu To Ho is used advantageously through a series of canals to irrigate growing crops along its borders.

The Chang Ho

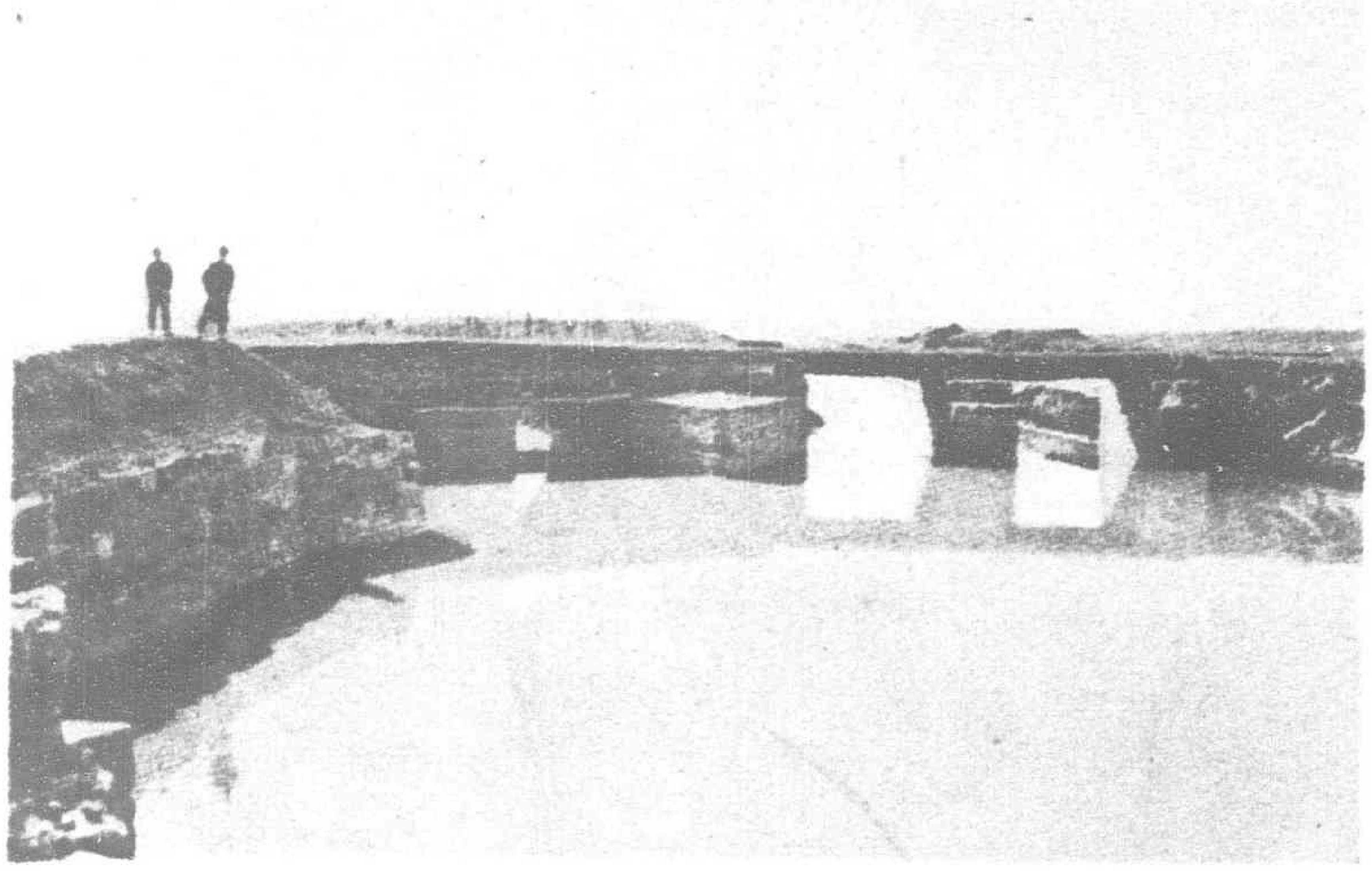
The Chang Ho flows from south-eastern Shansi to the east into Honan Province crossing the Peiping-Hankow Railway 10



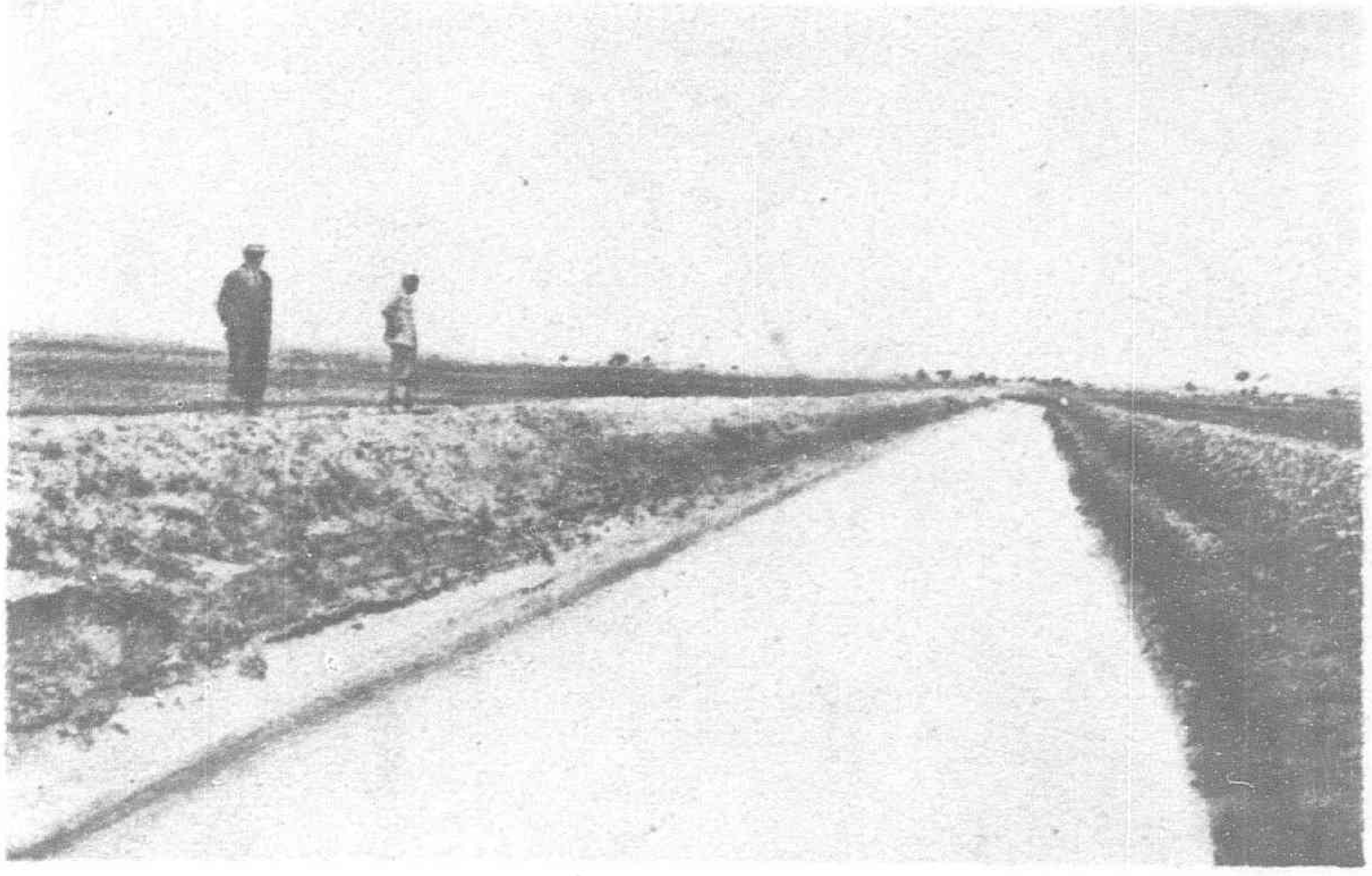
滹沱河平面圖

PLAN OF HU TO HO

SCALE 1:336,000



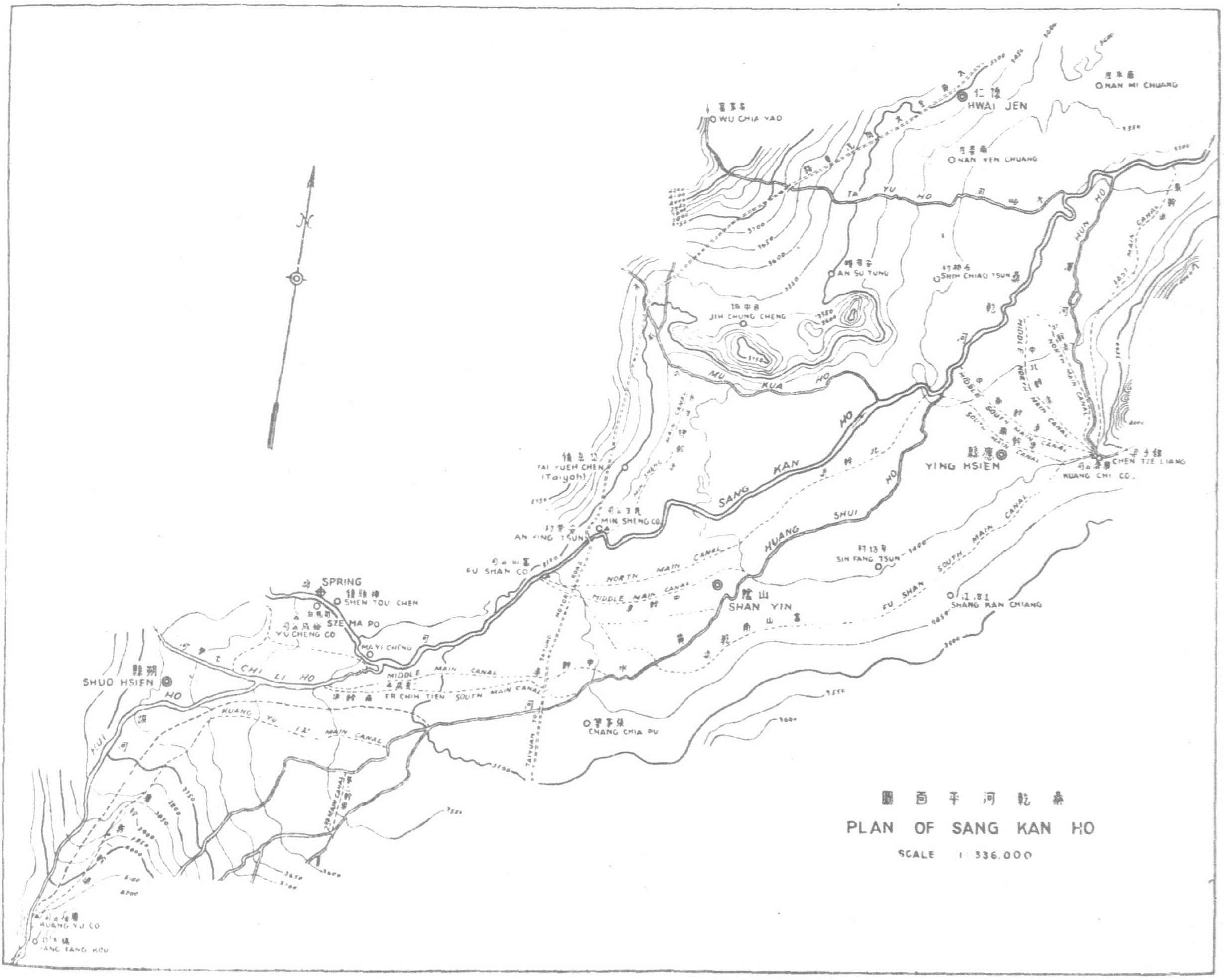
Head gates of Fu Shan Canal taking water from Sang Kan Ho west of motor road



The Min Sheng Canal where it leaves the Sang Kan Ho just east of motor road 50 miles south of Tatungfu

miles north of Changteh. Its greatest bordering plains in Shansi are near the head waters of its southern branches in the Luan region and the country to the north as far as Tsinchow and also to the west. Here the low water flow is small and storage in rservoirs seems impractical. Irrigating for years has been done by pumping. The valley lands of this plain seem well supplied with sub-surface storage. Our engineers have made a reconnaissance survey looking for suitable storage reservoir sites near the source of this river but find none worth developing. It does not, therefore, seem wise to attempt any large scale improvements to this river with the thought of storing winter run-off for use in Shansi Province.

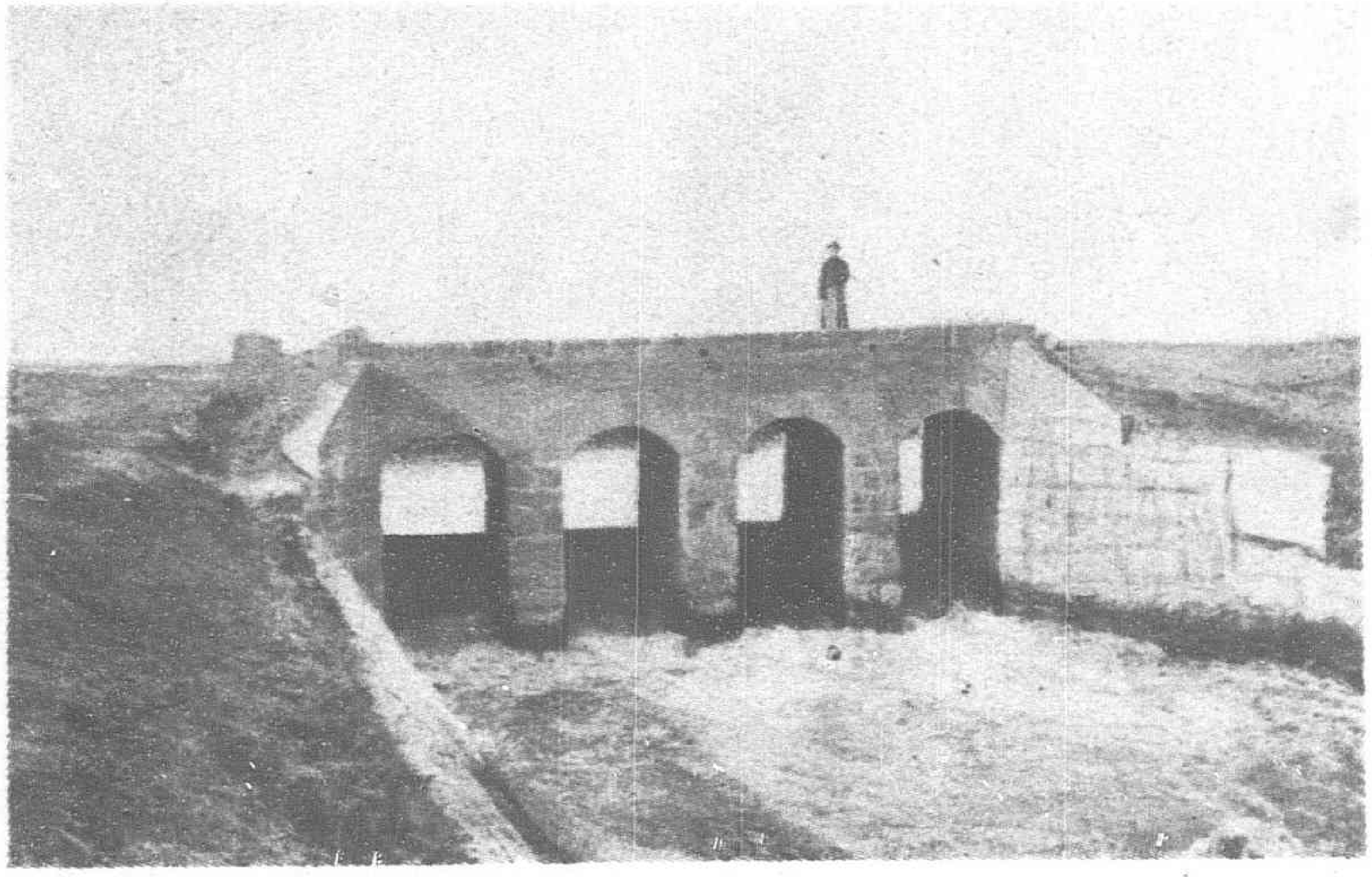
However, it is very possible that to the east of Luan it may be practical to store winter flow for use of farmers in Honan in the spring months where the natural flow of the stream is not sufficient to meet their needs such as on the lands near Fenglochen, north of



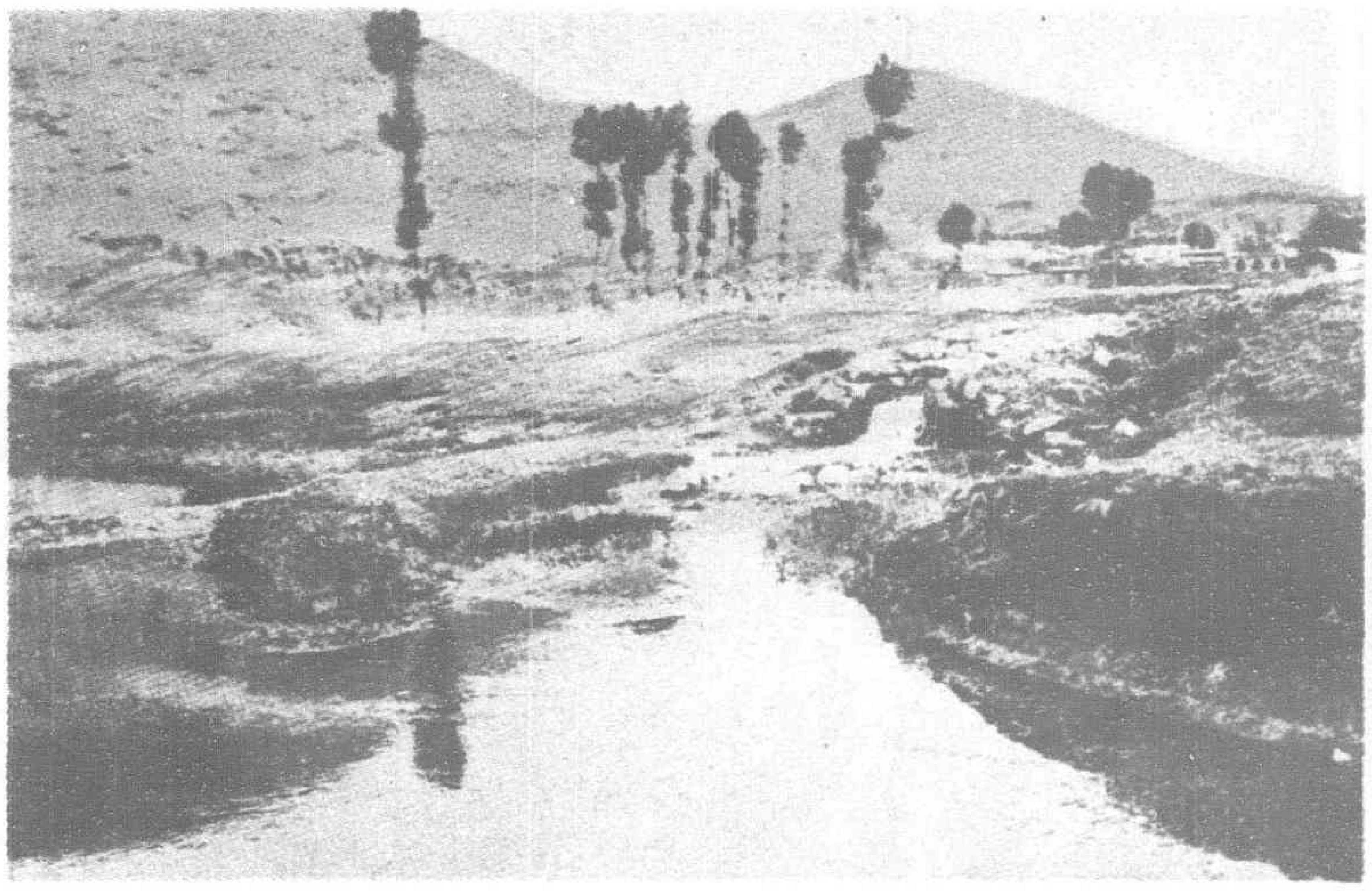
桑乾河平面圖

PLAN OF SANG KAN HO

SCALE 1 : 336.000



Waste gates at head of Fu Shan irrigation canal system feeding from Sang Kan Ho west of motor road



Springs at Sze Ma Po feeding one of the chief branches of the Sang Kan Ho near Shuo Hsien

Changteh on the Honan-Hopei border. These improvements would require inter-provincial arrangements.

The Chin Ho

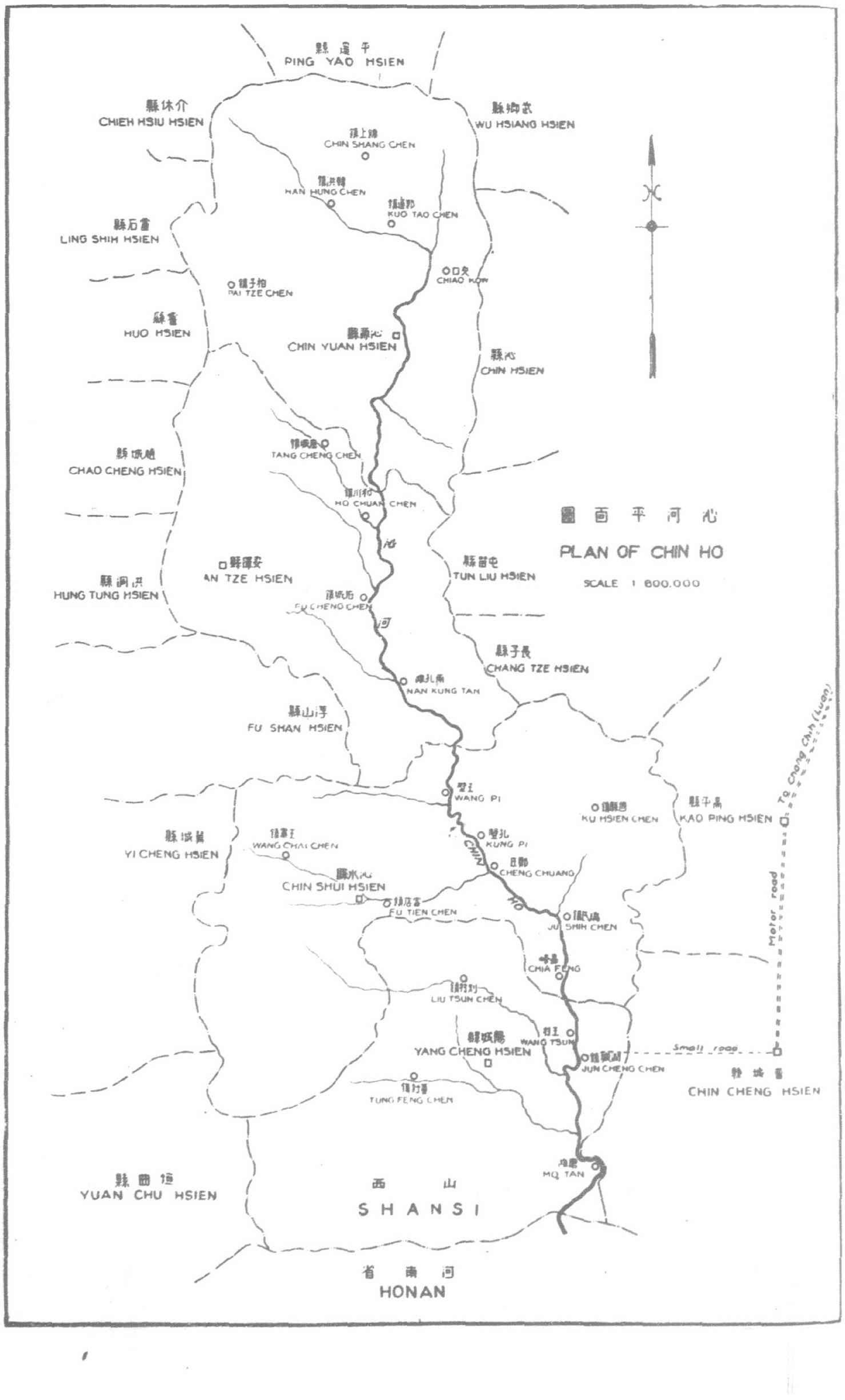
A traverse survey of the Chin Ho from the Honan border north about 80 miles was made this past spring by our engineers to investigate flood conditions and irrigation possibilities. The result of this survey indicated that the few valleys along this river in Shansi are too small to warrant expensive improvements for irrigation. Flood has not been a serious matter in this region. The river in Shansi passes through a rather narrow valley flanked by high hills. No large cities are located along its course in this province. As a source of water supply for irrigation this river does not become of importance until it gets into Honan Province to the south.

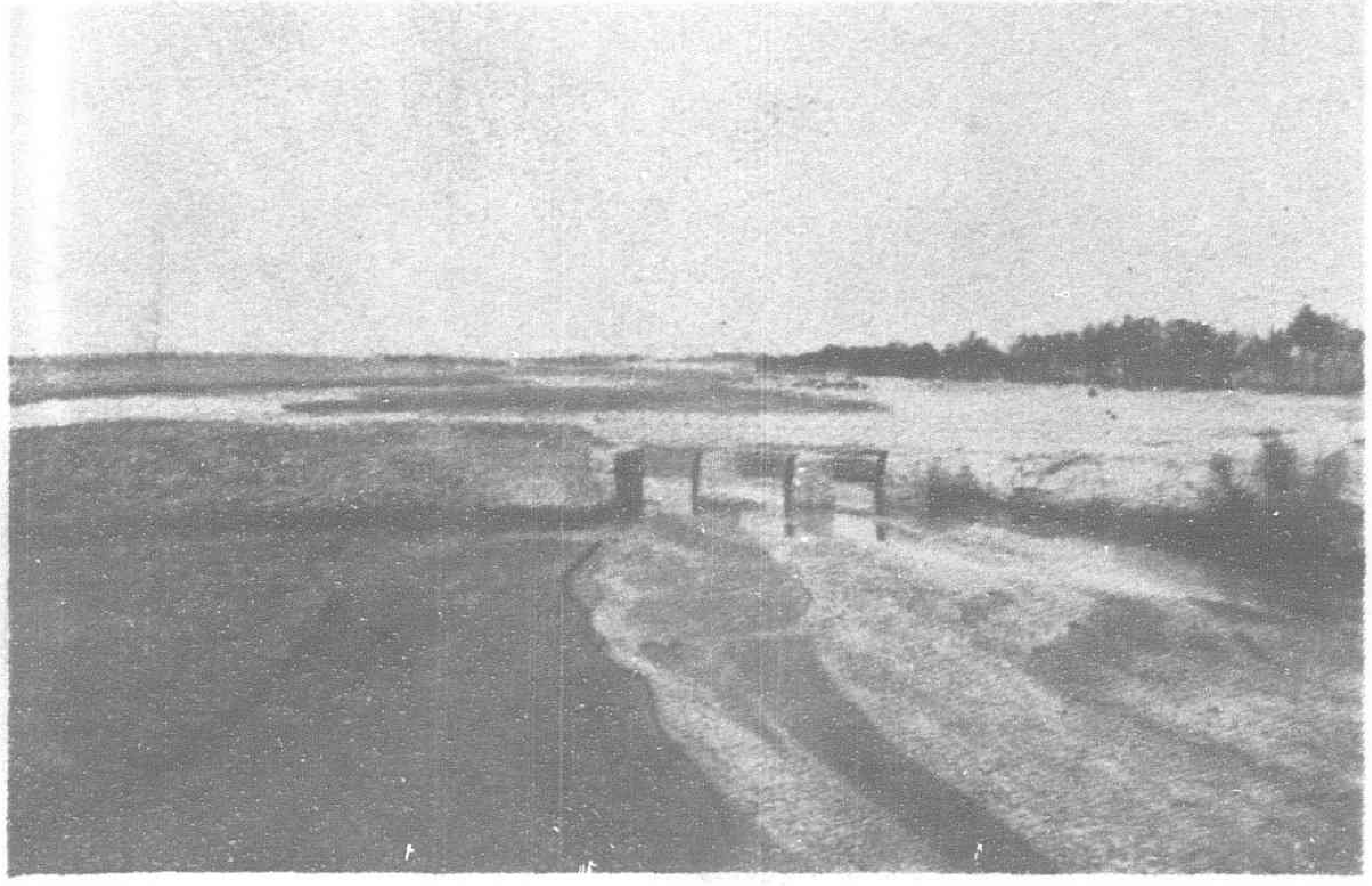
In June last my chief assistant, Mr. Chang, visited this valley with me near Jencheng on the road going directly west from Chincheng. We found this valley altogether too hemmed in by mountains to be attractive from an irrigation standpoint, within Shansi's boundaries.

On this same trip we made investigations of the Chang Ho valley along the motor road leading north through Luan to Chinchow noting the lack of wide stream beds and the very low flow in the dry season. In neither the Chang Ho nor the Chin Ho valley did we feel that there was a problem comparable to that of the Fen Ho. Though the farm lands of the Luan region watered by the Chang Ho are much better than those along the Sang Kan Ho and living conditions are much pleasanter, the opportunity to improve conditions of irrigation do not seem as great.

Conclusions

While Shansi's major problem in water conservancy has to do with the Fen Ho valley, there is work that can be done to advantage on other rivers of less magnitude. Of these lesser rivers the Sang Kan Ho offers the greatest possibilities for improvements. The Hu To Ho passes through an important valley containing a number of hsien cities including Sinchow, Taihsien and Kwohsien. This is a prosperous farming country on the whole, particularly where water is available. Some hope of supplementing the normal flow by moderate sized storage reservoirs makes this project rank next in importance to the Sang Kan Ho. The Chang Ho problem ranks third in this group because of the large area of good farm land along its upper stretches. However, it is not yet apparent where a great deal can be done to advantage to aid present methods of irrigation which is by pumping





Kwang Yu canal head gates on the Hui Ho (branch of Sang Kan Ho)

Springs at Sze Ma Fo, Shuo Hsien, at a source of the Sang Kan Ho

from shallow wells. The Chin Ho ranks last in importance due to its narrow valley and rather isolated location. While in the future some improvements can be made in irrigation along its course the problem is of small consequence compared with that of the other streams named.

Though the study of these minor streams has been made in a very preliminary way it was with the idea of having sufficient general information on hand to guide the Commission in the future as the whole scheme of water conservancy in Shansi begins to take form and the benefits of modern improvements become apparent. The judicious use of the water that falls in any agricultural region should be a matter of great concern to all of the members of the community. The hazard of damaging floods is one thing to be considered, but far more important in the northern provinces of China is the matter of conserving waste winter flow so it may be used during the spring months to supplement the low water flow of the various streams when water is so urgently needed to insure crops by stimulating the growth of plant life. Man can, to a great extent, protect himself against so-called natural calamities by being foresighted and availing himself of the bounty that nature offers him. He can and must regulate the rivers and store wasted waters when possible to do so at reasonable cost. This is of particular importance in North China where rainfall is light and droughts are frequent.

New Soviet Railway

Realizing the tremendous importance of more communications in the Far Eastern republics of the Soviet Union, the government has decided to build another railroad to be known as the Baikal-Amur line which will branch off at some point along the Trans-Siberian north of Manchuria and extend to Komsomolsk, formerly called Nikolaevsk, on the Sea of Okhotsk.

The projected railroad will follow the upper valleys of the maritime province and cross the Zeya and Burea rivers. In addition to the new line to Komsomolsk, a branch line will be built south through the maritime province to connect up with the Ussuri Railroad, terminating at Khabarovsk on the Amur river.

With the completion of the new railroad extending to the sea as well as the branch line south to the Ussuri, a triangular railway hook-up will be formed giving the Soviets a strategic hold over the region north of Manchuria not possessed at the present time. Although the doubling tracking of the Trans-Siberian railway has been considered the first step to the defense of the Far Eastern republics, the government early saw the added advantage of another sea port, particularly in view of the recent passages successfully carried out by ships through the Arctic linking up European Russia with the East by water.

Not only will the new Baikal-Amur railroad be another weapon in the spearhead of Soviet defense, but it will also increase the potential economic advantages of the region lying north of Manchuria.

It is expected that the new railroads will be laid down before the expiration of the second Fiver-Year Plan, already in its second year. However, with the government concentrating most of its efforts on the development of Siberia under the plan, it is more than likely that the new railroads will be finished within the next three years.

Plans are already under way to have the railroad gangs now employed at double tracking the Trans-Siberian, shifted to the new task as soon as men can be spared. Every inducement is being offered by the government to settlers from European Russia to migrate to the Far East. Better wages are being offered and it is quite probable that hundreds of these people will be persuaded to settle along the new route and to help in its construction.

New Chinese Railway

With the completion of the Nanking-Shaoan Railway which is now under construction by the Kiangnan Railway Company, another trunk line will be added to the network of railways in China.

Starting from Nanking the projected line extends as far as Shaoan on the extreme southern border of Fukien province, traversing four of the richest provinces of China, Kiangsu, Anhwei, Chekiang and Fukien for a total distance of over 1,000 *li*.

In view of its great distance the whole line is divided into five sections for construction. The first section extends from Nanking to Wuhu in Anhwei, construction of which has already been started. Part of the roadbed is understood to have been laid, and the laying of rails will be started as soon as the roadbed for the whole section is completed.

Construction work of this section for which over 10,000 workers are engaged is in charge of Yu Ching Engineering Company, Tientsin. The greatest piece of engineering work consists of a bridge across the Tangtu River in Anhwei. It is estimated that the whole section will be completed by next March.

The second section extends from Wuhu to Sunchiafo in Anhwei, which has already been completed and wasf ormally opened to traffic on November 26. It formed originally a section of the Wuhu-Chapu Railway, a line traversing Anhwei and Chekiang provinces, but owing to financial stringency construction of this line has been suspended and the Wuhu-Chapu Section has been subsequently incorporated in the projected Nanking-Shaoan Railway.

Construction of the other three sections, according to the authorities of the Kiangnan Railway Company, will be started next spring. The need of a railway linking Kiangsu, Anhwei, Chekiang and Fukien which form the most productive part of the country, according to the same Railway company authorities, has long been felt.

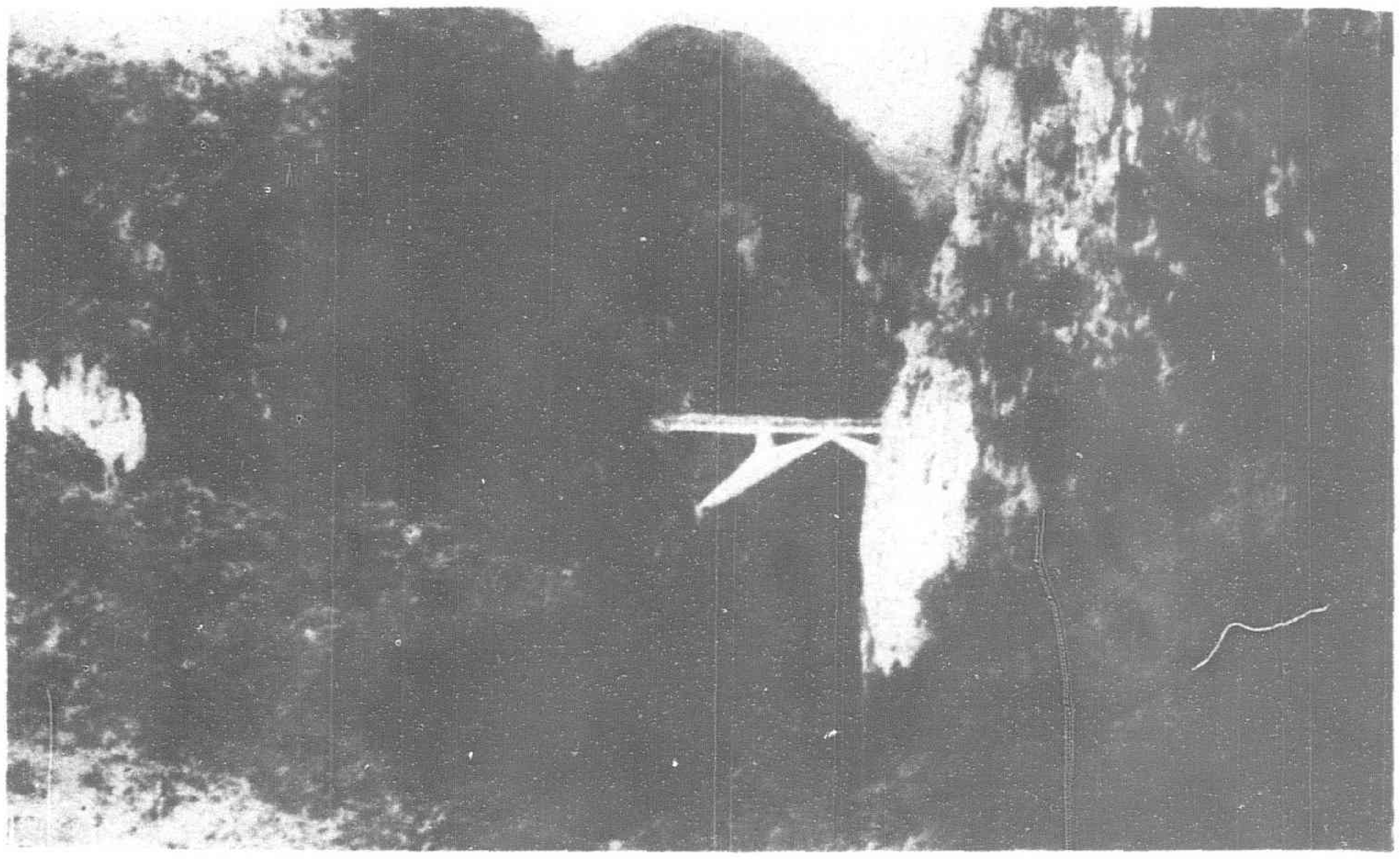
All along the projected Nanking-Shaoan Railway are districts noted for their special products; Wuhu, Tangtu and Hsuanchen for rice, Chimen and Liyuan for tea, Holi and Chichen for coal, to mention only a few. The construction of the Railway, it is believed, will not only supply a natural outlet for the products of these provinces, but also serve as a strong impetus to the development of industries in this part of the country.

The Hoiphong-Yunnan Railway*

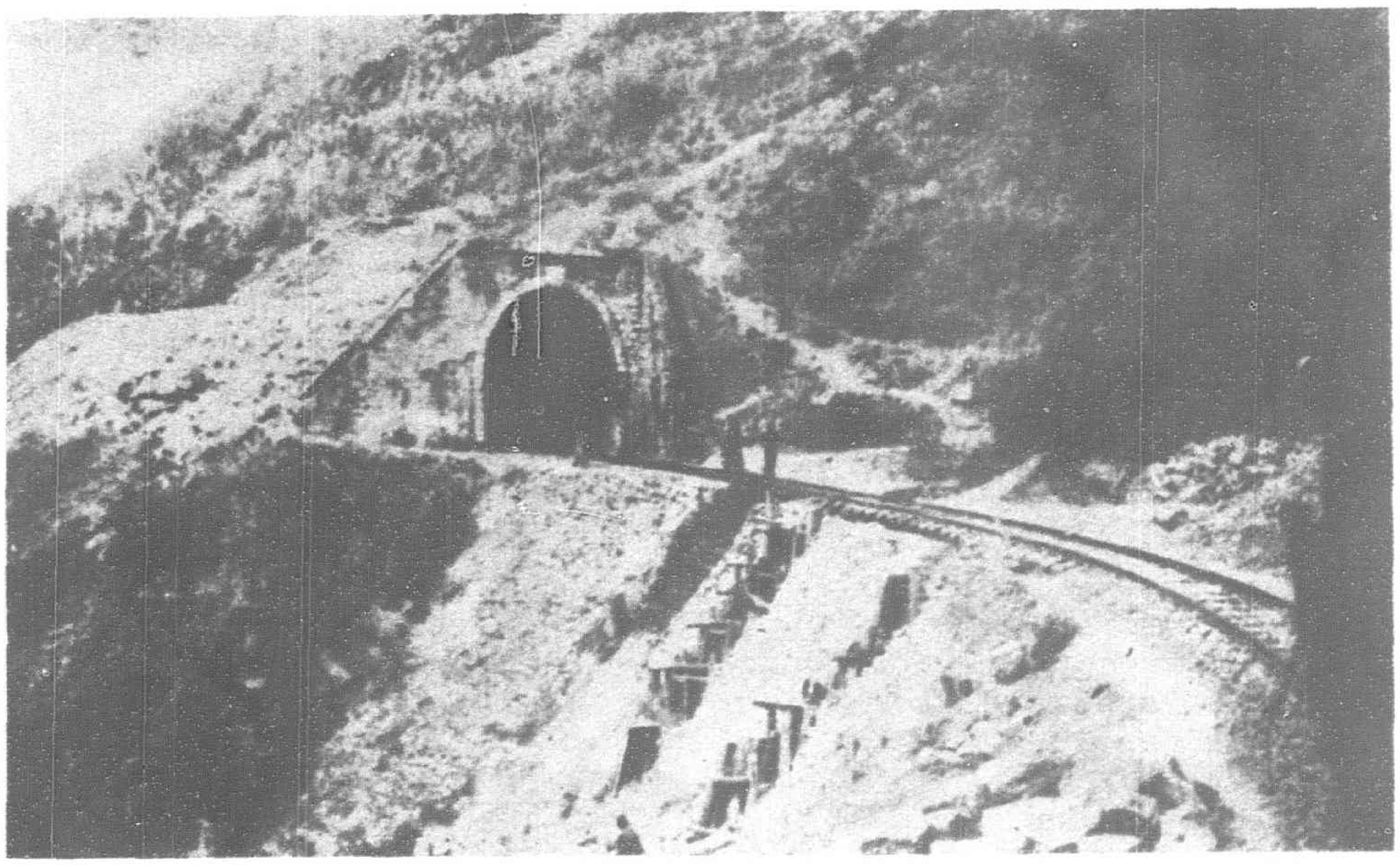
By Dr. K. MACKENZIE, M.Sc., Ph.D.

IN December, 1933, I made an excursion to Yunnan, the most southern of the provinces of China. The only convenient way of travelling is through French territory by steamer to Hoiphong, the principal port of Tong King, and thence by the railway which runs to the border of the Chinese territory and from there is operated by a French concession company into the interior of Yunnan. This line is a remarkable engineering achievement, and a few observations, albeit made by an amateur and therefore liable to mistakes and omissions, may be of interest.

The line has a total length, single track, of 826 kilometers of which 380 kilometers lies in French, and 446 kilometers in Chinese territory. It is of one meter gauge, with steel sleepers throughout, laid on the usual rubble ballast, and with heavy-steam Vignoles rails (I should estimate 75 lbs. per yard). This track is expensive in cost and upkeep, but provides a large margin of safety and very smooth travel. Owing to the great changes of temperature experienced both in the lowlands and the mountainous districts, but particularly the latter, the expansion joints have to be large, as much as one inch in a twenty-four foot rail, and yet trouble owing to excessive expansion and consequent deformation of the track is not uncommonly experienced.



Bridge over Nam Ti Gorge, length 550 feet, about 800 feet above river. It is approached by two right angle curved tunnels in the cliffs to left and right

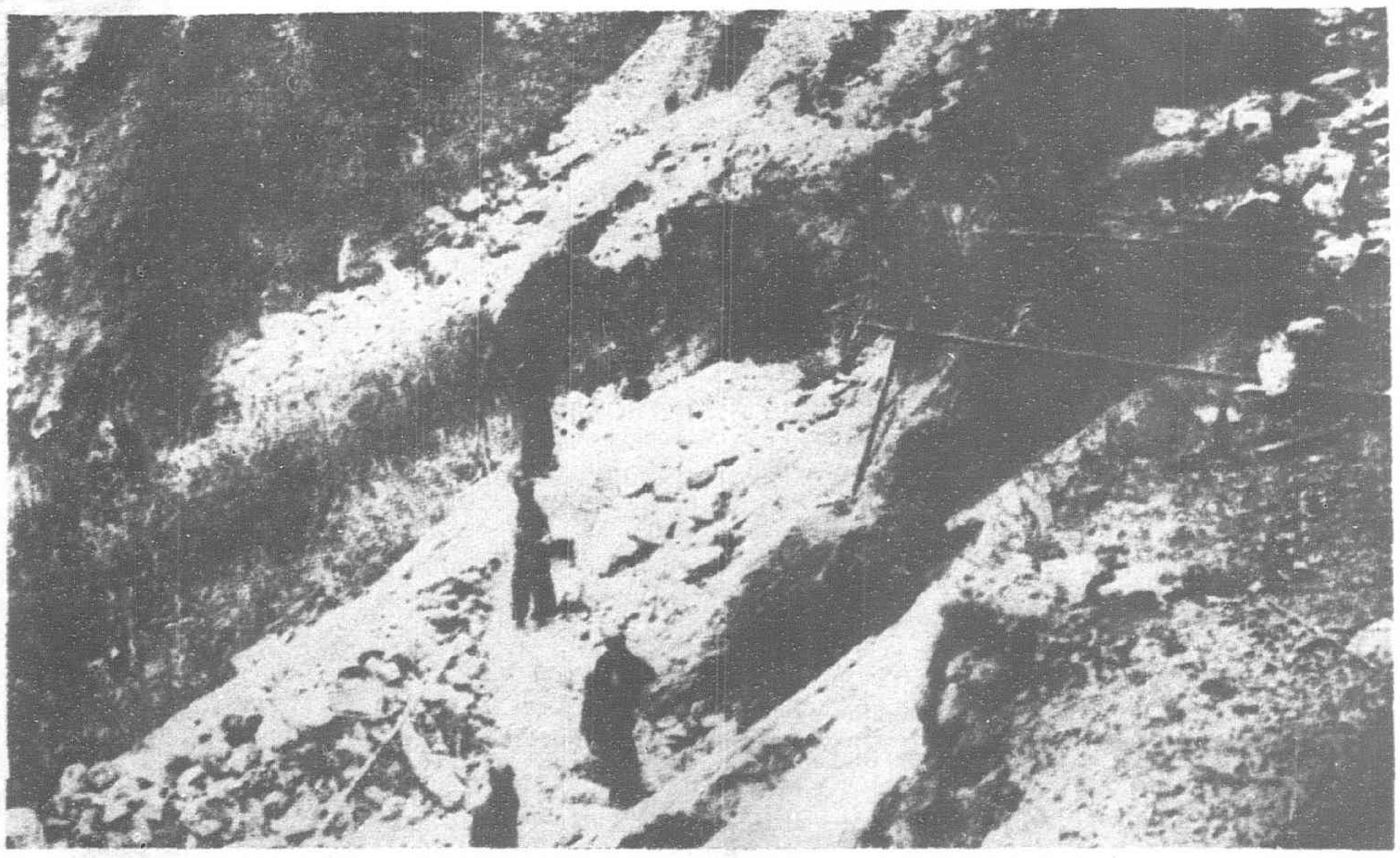


Tunnel 93, in Nam Ti Valley, about 70 km. from Lao Kay. The rock is limestone with laminated beds of shale which cause frequent slips. This is being overcome by provision of a new tunnel of greater length

There are no chairs—the rails are attached to the sleepers by bolts and a flange piece allowing lateral movement during expansion.

The engines are powerful affairs made by the Societe des Batignolles, and in general follow French practice, particularly in the appearance of unsightly excrescences on the boiler stuck on anyhow. They are mostly of the 2-8-2 type, with built in water tanks and coal compartment, but there are also some long-haul locomotives with attached tenders. They have paired outside cylinders, compounded, of about eight inch and 14 inch diameter respectively and 18 inch stroke, and the expansion gear is arranged to work from $\frac{1}{3}$ cut off up to full stroke in the h.p. cylinder. Boiler pressure is about 180 lb. sq. in. The driving wheels are about four feet diameter and placed outside the main frames. The great overhang of the boiler and its attachments gives them a somewhat comic appearance, but they are quite adequate for the heavy work encountered.

The rolling stock is all of the bogie type, and includes freight vans and passenger coaches, all fitted with central spring buffer couplings and pressure brake system. An average train consists of ten pieces totalling about 200 tons, containing one composite coach for first, second and third class, four fourth class coaches and the rest freight. Each coach is provided with a water tank and lavatory, and the composite coaches have electric lights and fans and room for 50 passengers (10 1st; 15 2nd, and 25 3rd, the fourth class capacity is elastic). Meals are served on the trains, and are passable in quality. A certain number of sleeping cars de luxe are used in the summer season



Landslide below track at Tunnel 93. Several workmen were killed when track collapsed during shoring operations only. The overhang of the coaches enables them to equal the standard gauge type in size and comfort.

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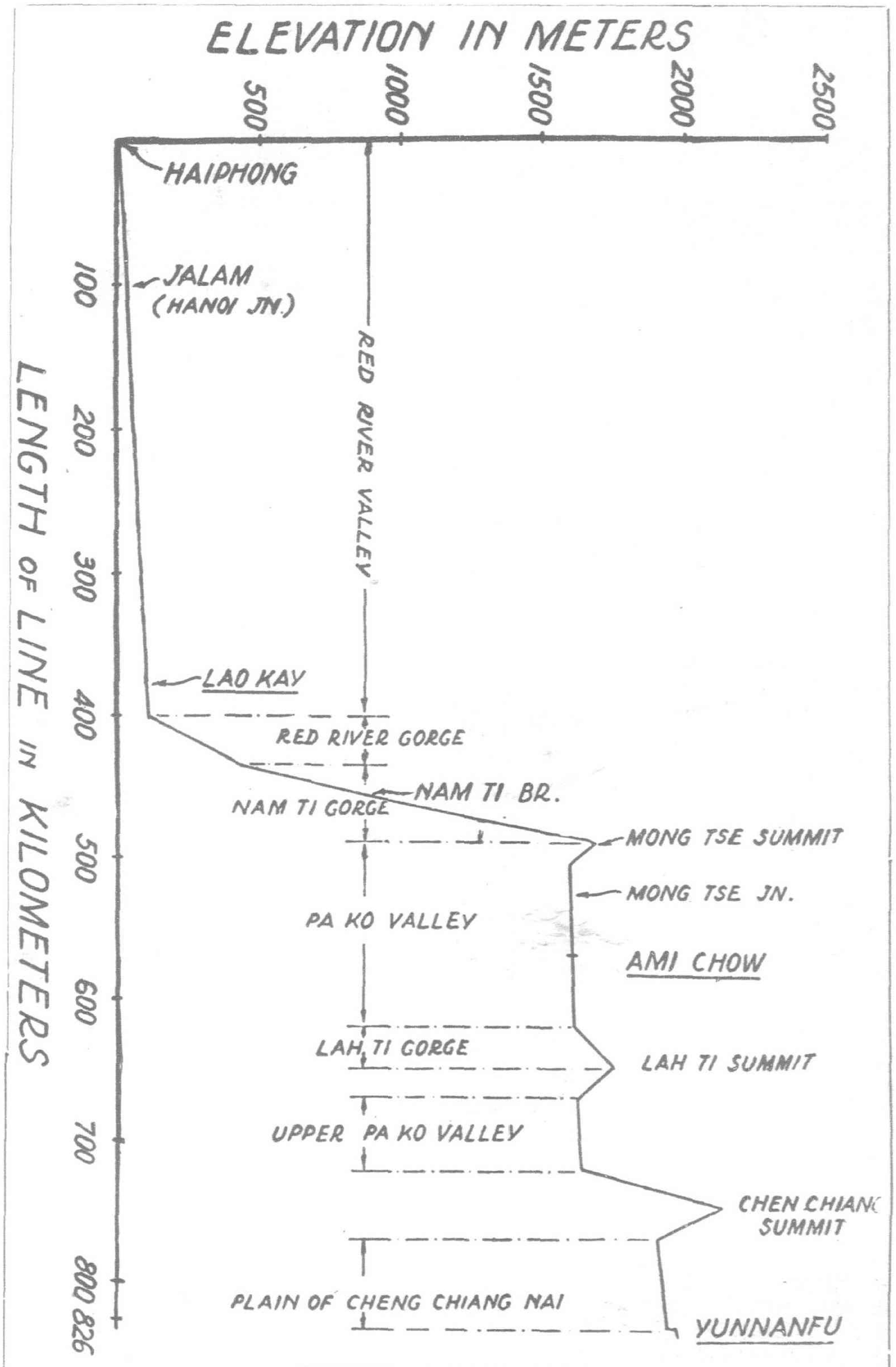
* *Hongkong University Engineering Journal*

The gradients on the line are very severe. The rough profile plan, taken from the kilo marks and the readings of my pocket aneroid, though probably not quite correct, will serve to show the remarkable efforts required of the locomotives. In the first 400 km. the line rises only about 100 meters, but in the next 120 km. it ascends no less than 1,700 meters, giving an average gradient of 1.4 per cent. Actually, however, the gradient varies considerably, and often exceeds three per cent for several kilometers. A tank engine is usually added, if the train is heavy. A descent is then made from Mong Tze Summit to about 1,600 m., and for the next two hundred kilometers the line proceeds over a slightly rising plain. Then another steep ascent is made to the highest point (2,170 m.—more than 7,000 feet) followed by an equally steep descent to a third plain, and a final slight ascent to the plain of Yunnan Fu, about 6,000 feet (1,969 m.) above sea level.

Describing the actual journey, I found the first day rather uninteresting. The train leaves Hoiphong at about 6.30 a.m., and reached the Hanoi junction in about three hours. Here a change is made to the train for Lao Kay, the frontier station, where we arrived about 7 p.m. thus taking 12 hours for 380 km. This hardly does justice to the capabilities of the train, however, for on the return journey we were delayed for three hours by track repairs in this section, and thereafter the train did 80 km. per hour between stations and regained nearly two hours of the lost time. The line proceeds alongside the Red River, and over the broad alluvial plain, so that there is no gradient or engineering works worthy of notice.



Sketch plan of Railway from Haiphong to Yunnanfu.

On the second day, the train leaves Zao Kay and crosses the Red River by a large steel bridge to the Chinese frontier town of Ho Kow. After a considerable wait for customs inspection, the train resumed its course along the Red River, which was soon confined to a narrow gorge. At km. 398, the gradient suddenly steepened to 1 in 80, and the train slowed down to about 15 miles an hour. Non expansive working of the h.p. cylinders increased the blast from the engine so that it belched much of the fuel from the funnel, and a heavy rain of slag particles settled everywhere. The surrounding jungle showed evidence that fires from this source were not uncommon. At km. 422, we again crossed the main river by a short girder bridge and entered the tributary valley of the Nam Ti. Here the scenery was inconceivably grand. The valley of the Nam Ti is fully three thousand feet deep, and not more than three miles wide at the summit, where, on the opposite side and about two thousand feet above our own elevation of a thousand feet or so, we could see the line proceeding down the valley as we were going up. The gradient increased to as much as 1 in 37, and the pace fell to 10 miles an hour. At km. 445 we passed over a steel trestle bridge fully 200 feet high and 400 feet long, with a right angle curve in its length and a tunnel at the opposite side. More than one hundred tunnels, varying from a few yards to half a mile in length were encountered. At km. 468 we reached the point where the train crosses over the river Nam Ti by a most remarkable engineering feat. The gorge is here a vertical cut about 1,000 feet deep, the walls being 400 feet apart and perfectly sheer. The bridge consists of a braced girder supported by two unsymmetrical trussed girders which meet in an inverted V. The line is connected to the bridge by two tunnels on 90° curves. The thrill of emerging on to the bridge, suspended high above the foaming water and overhung by profound vertical rock walls, is unforgettable. The train then proceeds in the reverse direction along the valley, rising continually, and finally forces its way over the divide at Mong Tze Summit, more than 3,000 feet high. From this point there is a short but steep descent (gradient 1 in 40) to the plain of the Ta Ko, a great expanse of rich soil entirely surrounded by mountains rising to 8,000 feet. They are not snow covered, for the precipitation is not great. At km. 528 is Mong Tze junction, a large station from which a 60 cm line diverges to Mong Tze, the principal town of the district, which is the center of the tin mining industry, one of the most important articles of freight on this line. The branch line is Chinese owned, at least nominally, and is about 30 km. long. The large engines and coaches on such a tiny track have a grotesque appearance. Proceeding, at km. 570 the station of Ami Chow (height, 1,630 m.) is reached, after about twelve hours travelling and the second night is spent here. Only 190 km. are covered in the day, and only about 80 km. as the crow flies but more than 4,000 feet of total ascent and 1,000 feet of descent are included.

A bridge 1,000 feet above the river bed and connecting the line with two tunnels

The third day's journey is a run of 256 km., and is equally interesting. For a few miles beyond Ami Chow the line travels over a gently rising plain, then at km. 620 it enters the gorge of the Lah Ti, a tributary river, and ascends to 1,770 m. The line is guarded by numerous tunnels, as the friable limestone of this region is subject to frequent falls in the wet season and frequently causes delays. At many points guard tunnels of reinforced concrete have been erected to deflect the falling rocks, and in one case a stream has been diverted over the valley of the Upper Ta Ko. This is now reached by a gentle descent, and at km. 720 another severe ascent commences, which takes the line over a mountain range nearly 8,000 feet high (summit 2,170 m.) This is a very exposed region, where the temperature shows immense diurnal variations, sinking below zero at night. The train then makes an abrupt descent (1 in 40) to the plateau of Yunnanfu, and the two great lakes, Chen Ching Hai and Kun Yung Hai, on the border of which latter Yunnanfu stands, are seen on the left. A final burst of speed across the undulating plain brought us into Yunnan by six o'clock.

The whole line is kept in excellent condition, for French engineers are in charge throughout. The line and a strip of territory from 10 m. wide on the plain to 50 m. at the stations is leased to the French authorities for a period of 99 years from 1902, the year in which the construction commenced. It was completed in 1906, at a cost of perhaps £400,000, of which £70,000 is said to have been spent on the Nam Ti bridge—not so much on the actual material as on the difficulties of transport. The contagious fevers of the Nam Ti valley, which has a bad reputation and is almost uninhabited is said to have carried off 40,000 laborers. Owing to the absence of competition, the line has paid good dividends ever since its inception, and this in spite of heavy annual expenditure on additional tunnels and track repairs. Another great source of expense is that, although there is coal of excellent quality obtainable in Yunnan, the obstructive attitude of the Chinese officials makes it necessary to import all the coal from French territory and increases the amount of freight going up the line. On the other hand, it forms a return load for trains going up, since the import dues for materials passing out of the leased ground are practically prohibitory. The main exports are minerals, tin and wolfram—opium is said to be exported only through Chinese routes. The scenery is admirably maintained, and in summer time when heavy rains are apt to cause wash outs and rock falls, the trains run night and day and cover the distance in somewhat less time, in spite of unforeseen delays.

Yunnan itself contains several features of engineering interest. The white pagoda, a structure showing Bannese (?) influence and the Bronze Temple, a full size temple with walls, doors, roof and altars all made of the metal and containing many thousands of tons, date back to the Ming Period. The town has also some modern features, introduced by French influence and the convenient railway. There is a hydro-electric plant of 750 kw. installed by Siemens and supervised by a resident German engineer and his assistant. There is a large Pelton turbine installation about twenty miles north of the town, with direct generation at 3,300-volts and a series of substations giving 110-volts in the town. The supply is inadequate, and the voltage falls to 40 at night, but another unit of equal size is to be installed shortly and should overcome this. There are three radio stations, the oldest having a single steel lattice mast of 200 feet, designed in the days when "Tour Eiffel" principles were accepted. Unfortunately it has never been used, as some of the equipment was lost in transit, and the design was considered obsolete before it could be replaced. The other two stations, with smaller masts and modern equipment, maintain a satisfactory service.

Japanese Railways

Despite the fact that the Japanese government railway's net profit is calculated to exceed Y.110,000,000, the Railway Office does not contemplate a single new line for the coming fiscal year not already included in the program drafted during the régime of Chuzo Mitsuchi, predecessor of Railway Minister Nobuya Uchida.

All the money to be spent out of the profit will instead be used for improving the railway service, mostly involving better facilities for third class passengers.

The government railway did remarkably well financially during the current fiscal year. The traffic revenue is estimated to reach the total sum of Y.530,471,000, which is Y.62,000,000 better than the previous year's showing. This will make the total railway receipts more than Y.749,000,000, which surpasses the previous year's figure by Y. 74,000,000.

The disbursement is calculated as Y.647,900,000, which exceeds the 1934 total by Y.38,000,000. In view of the remarkably good financial showing by the government railway, many believe that the desire to transfer part of the railway profit to the general government account may be revived in some quarters.

One of the most noteworthy facts is that Railway Minister Uchida has indicated, so far as the construction schedule is concerned, strict adherence to the Mitsuchi program, which will shut out any manœuvers to be launched by various districts for the construction of new railway lines.

In lieu of planning new lines, the Railway Minister, true to his advance declaration, has made the largest item railway improvement, for which a sum of Y.87,700,000 is to be set aside, or Y.30,000,000 more than was appropriated a year ago for the same purpose.

Out of this total Y.14,000,000 is to be expended for building additional rolling stock such as 119 steam locomotives, eight electric locomotives, 210 passenger coaches, 59 electric cars, and 2,900 freight cars. In addition, Y.5,000,000 will be spent for improving tracks and Y.2,800,000 for improving railway stations.

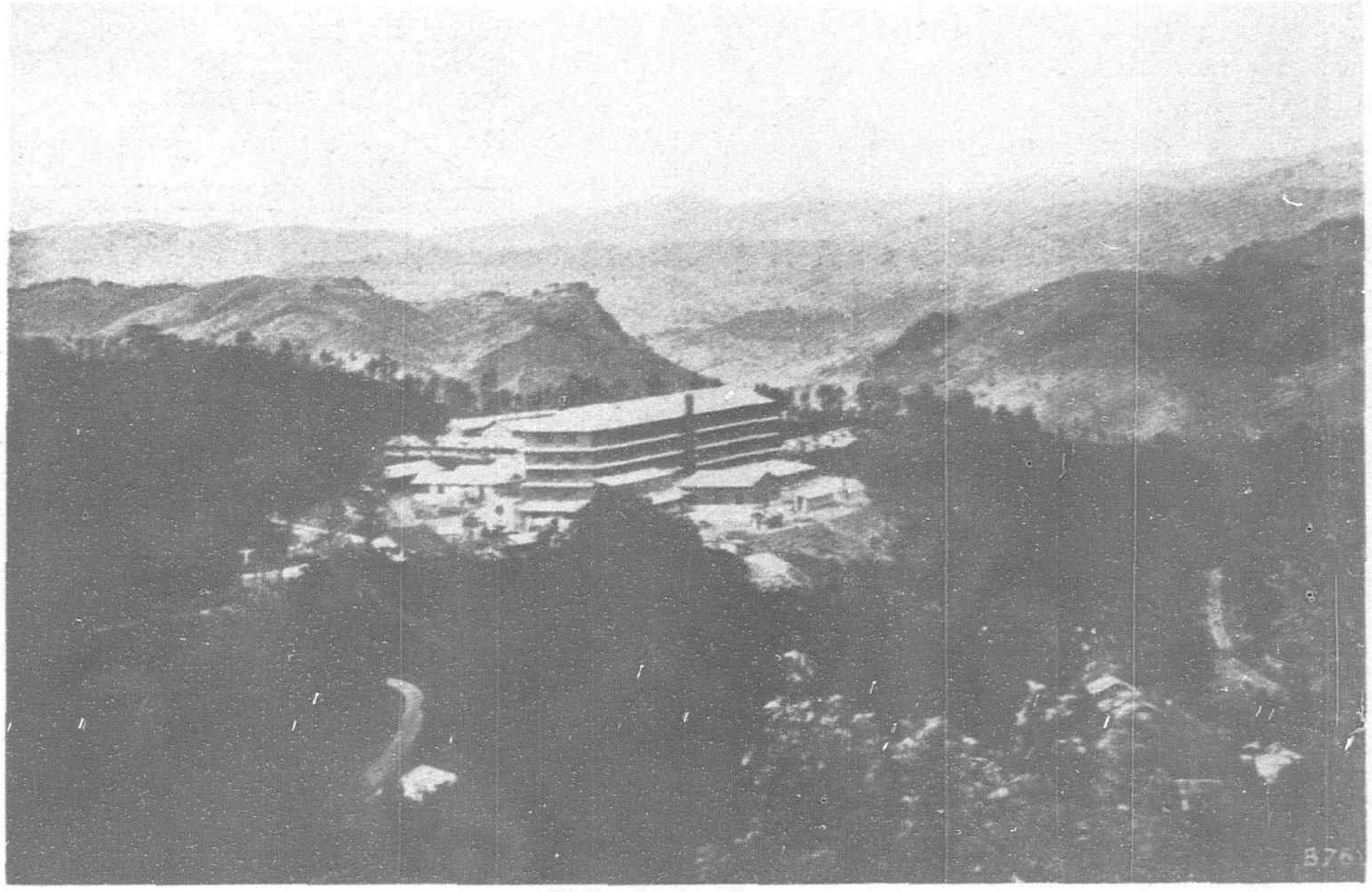
For building two 6,500 ton ferry steamers to ply between Shimonoseki and Fusan, the Railway Office will spend Y.4,000,000, while for improving the vicinity of Tokyo station and that of the Minatomachi station in Osaka, for doubling the tracks between Tachikawa and Asakawa, and for electrifying the Ueno-Matsudo section, a sum of Y.48,000,000 will be expended.

Sprinkler Systems Used to Check Fire Losses in Ceylon Tea Factories

DURING recent years rapid strides have been made in the development of the Tea producing industry. The installation of costly modern machinery and the adoption of scientific methods have not only aimed at obtaining the best results from the quality of leaf brought in from the fields, but also to reach, as nearly as possible, that consistency so much appreciated by the Broker and so valuable a factor in these days of keen competition—the establishment of a " Mark " of recognized quality.

One problem, however, still exercises the minds of the majority of Tea Planters—the ever-present menace of fire.

In Ceylon alone, ninety-three Tea Factories, including some of the most modern design and construction, have been totally destroyed by fire in the comparatively short period of six years.



Craighead Tea Factory amidst typical Hill Scenery in Ceylon protected by "Grinnell" Automatic Sprinkler and Fire Alarm System

What happens in a large proportion of these disastrous fires ?

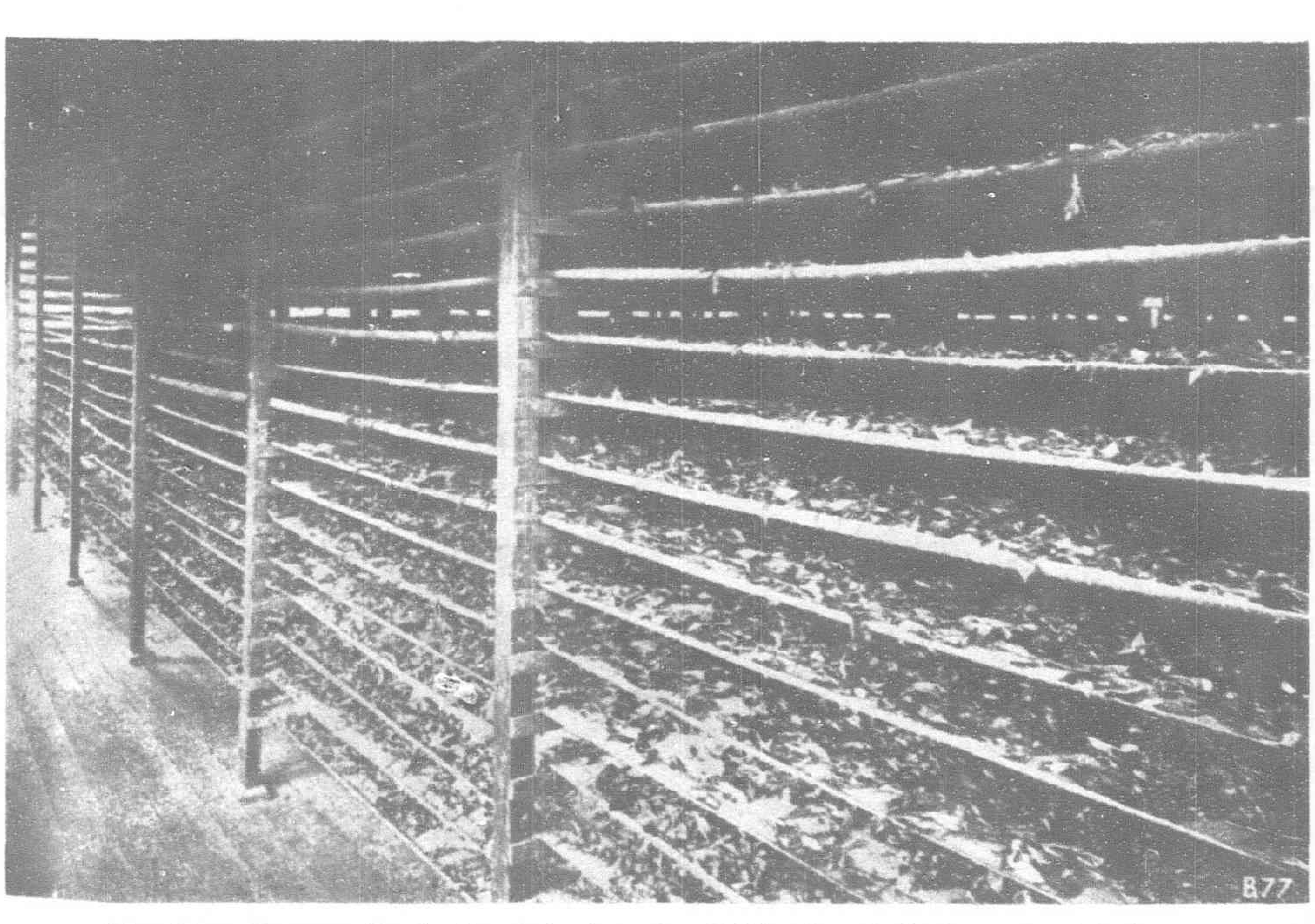
Fire breaks out in the Withering Lofts—easily understandable when it is remembered that the Lofts consist of thousands of yards of hessian trays or " tats " as they are called, on to which, during damp or cold days, hot air is blown direct from the Tea Firing machines on the ground floor. Should a fire, from any of a variety of possible causes, break out at night, when the only person to enter the Lofts is the night watchman on his rounds, the highly combustible hessian trays and wood lining of the factory ignite with ease and the fire secures a firm hold before the outbreak is discovered. Then, notwithstanding the efforts of the night watchmen, who often show commendable courage in their efforts to fight the fire with the limited means at their disposal, it is found impossible to cope with the situation and it soon becomes a matter of extreme urgency to leave the building before being trapped in a raging inferno. The Manager, aroused from his bed, arrives only in time to witness, with a feeling of utter helplessness, the total destruction of his company's enterprise, the crash and roar of falling steel and timber and the flames leaping up to the sky, making an awe-inspiring picture against the background of mountain, field and jungle. All that is seen the next morning is a mass of fantastically twisted steel.

Gloomy as this record may appear, it is entirely true to fact, and, as no Tea Factory can be regarded as immune from the danger, many a Planter must view with apprehension the probable result of an outbreak of fire. Replacement with an up-to-date equipment might cost anything between £8,000 and £30,000—in itself a severe blow. To the loss of plant and factory must be added that resulting from the disorganization of a business which, at considerable cost and care, has established a steady market ; while the temporary loss of the " Mark " would place upon the Planter the necessity of building up a new character for his Tea, which must often differ under the altered conditions of a new factory.

Probably the most disturbing feature of Tea Factory fires in Ceylon is that the total loss to the industry for the six years under review shows an alarming increase on that for the previous six years. It is significant that in 1931 losses were more than double those for 1929—a fact which surely justifies drastic action to save the industry from an unnecessary burden.

What is the Remedy?

It will be agreed by all who have an intimate knowledge of the construction of Tea Factories that, once a fire has become well started, any hope of extinguishing it by ordinary hand appliances, or by hydrants, has already gone. It is impossible to reach the seat of the fire inside the building with hand appliances, and to attack it from the outside with hydrants would be completely hopeless, even if water were available in sufficient quantity.

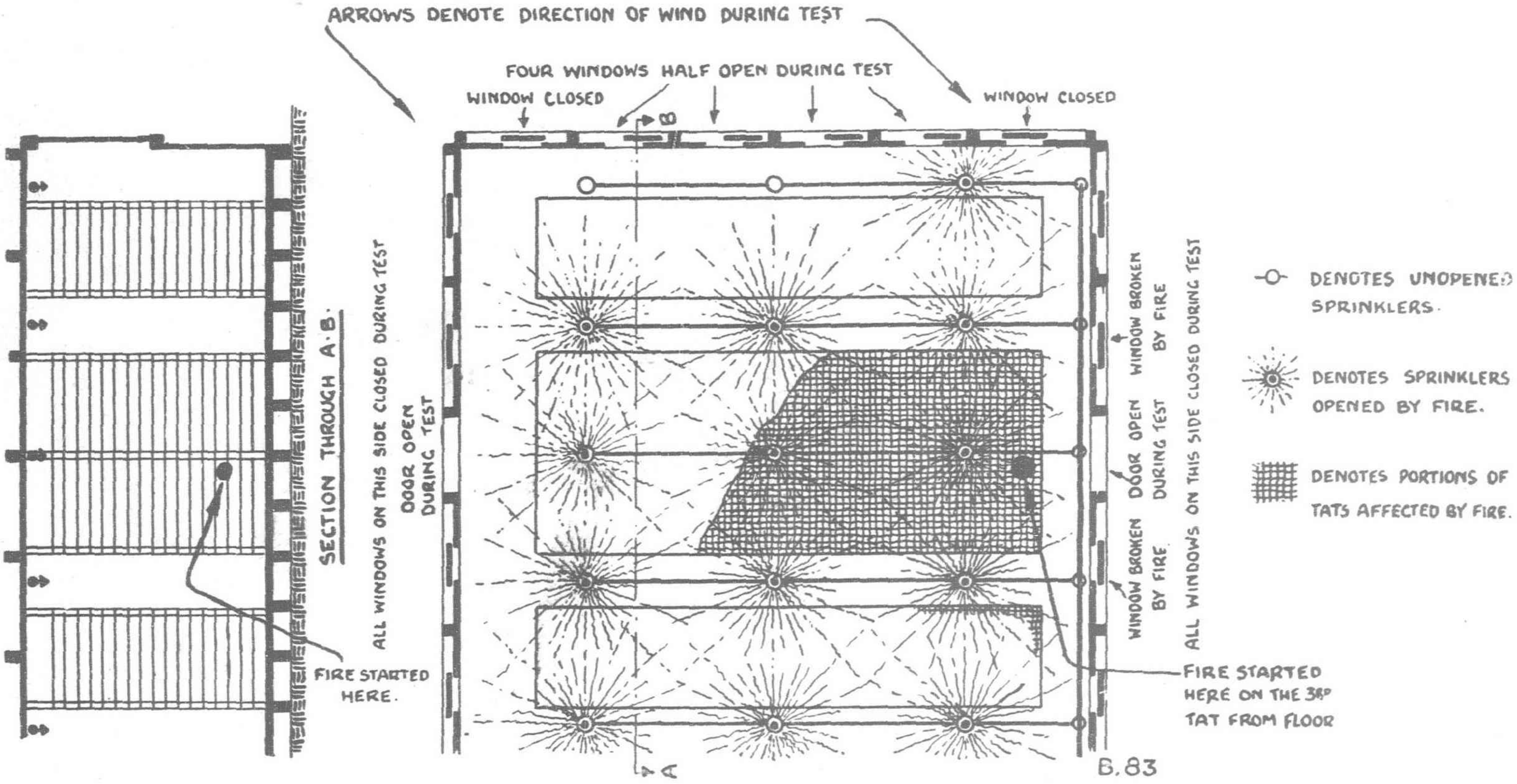


The Fire Danger Spot—the interior of a Withering Loft in a Tea Factory

This class of risk most definitely calls for Automatic Sprinkler protection—with sensitive sprinkler heads in every corner of the building, ever ready to attack a fire at its very inception, and to render harmless what might otherwise become a general conflagration.

Arguments have been put forward to the effect that Sprinklers would not get at the cause of fires in Tea Factories in Ceylon, and that it would be better to remove the cause rather than to seek the remedy.

It is remembered by many who were interested, some years ago, in the disastrous series of fires in the cotton storage areas in Alexandria and Bombay that the same discussions arose. Those fires were attributed to a variety of causes which could not be eliminated by the installation of sprinklers. Nevertheless, sprinklers were eventually installed in both districts, with the result that there has never since been a serious fire in a sprinklered risk in either of the important areas referred to, and this during periods of time of over 20 years and 10 years respectively.


ARROWS DENOTE DIRECTION OF WIND DURING TEST
FOUR WINDOWS HALF OPEN DURING TEST
WINDOW CLOSED
B
WINDOW CLOSED
SECTION THROUGH A·B
ALL WINDOWS ON THIS SIDE CLOSED DURING TEST
DOOR OPEN DURING TEST
FIRE STARTED HERE.
WINDOW BROKEN BY FIRE
DOOR OPEN DURING TEST
WINDOW BROKEN BY FIRE
ALL WINDOWS ON THIS SIDE CLOSED DURING TEST
FIRE STARTED HERE ON THE 3RD TAT FROM FLOOR
A
B.83
DENOTES UNOPENED SPRINKLERS.
DENOTES SPRINKLERS OPENED BY FIRE.
DENOTES PORTIONS OF TATS AFFECTED BY FIRE.

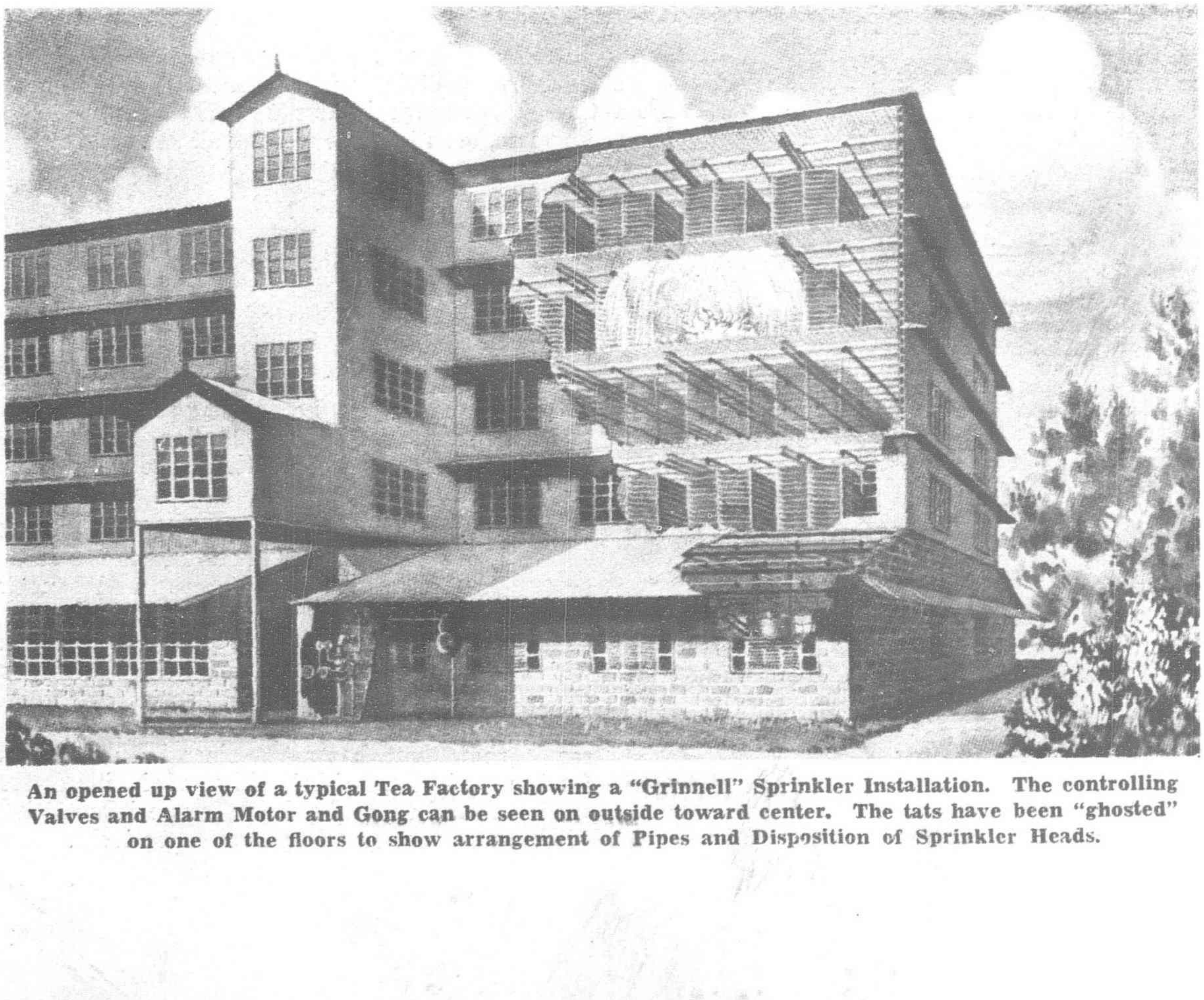
Details of a test fire in the full-scale Withering Loft which was "Constructed to Burn"

Both cause and effect would seem to have been dealt with. Fires still occur, and are extinguished by the Sprinklers, and better precautions are then taken to prevent a recurrence whenever the origin may be traced. In cases when the cause of fire has been carelessness, or even mischief, the results go to show that the prompt action of the Sprinklers, and of the Automatic Fire Alarm, creates a wholesome fear in the mind of whoever may have been concerned, and a repetition does not occur.

Object lessons such as the one mentioned can leave no doubt as to the crying necessity for Automatic Sprinkler Protection in Tea Factories. It is surely better to take steps to prevent factories from burning—whatever the cause—rather than be compelled to stand by and watch them burn one after the other and commence investigations as to what started the fire when all evidence has disappeared.

Realizing the seriousness of the situation in Ceylon, an intensive investigation was carried out in co-operation with the Insurance Companies and the Fire Offices' Committee with regard to the special needs of the Tea Industry and with a view to adapting the Automatic Sprinkler to the peculiar problems of the Tea Factory.

At the conclusion of the preliminary investigations large scale experiments were conducted in an exact reproduction of a Withering Loft. Nothing was left to chance for, in view of the known difficulties, it was essential to prove the efficiency of Automatic Sprinklers by carrying out convincing demonstrations staged under the worst possible conditions.



An opened up view of a typical Tea Factory showing a "Grinnell" Sprinkler Installation. The controlling Valves and Alarm Motor and Gong can be seen on outside toward center. The tats have been "ghosted" on one of the floors to show arrangement of Pipes and Disposition of Sprinkler Heads.

Those tests were entirely satisfactory and demonstrated that an outbreak of fire in a "bank" of "tats" becomes, by the bursting of surrounding Sprinkler Heads, an agent in its own extinction—drenching showers of water being precipitated around and over the fire. At the same time, an automatic alarm is sounded all over the neighborhood to summon the staff who, on arrival, find the fire either extinguished or so well under control that it is a simple matter to beat out the smouldering embers in a few seconds. All this is done with a minimum expenditure of water.

In substantiation of what has just been stated we are able to record the following particulars of a demonstration given to some of the leading members of the Tea Industry and of the Fire Offices' Committee. We might add that the impressive demonstration described was only one of several equally successful tests, the only difference being that the fire, in subsequent trials, was started in different places.

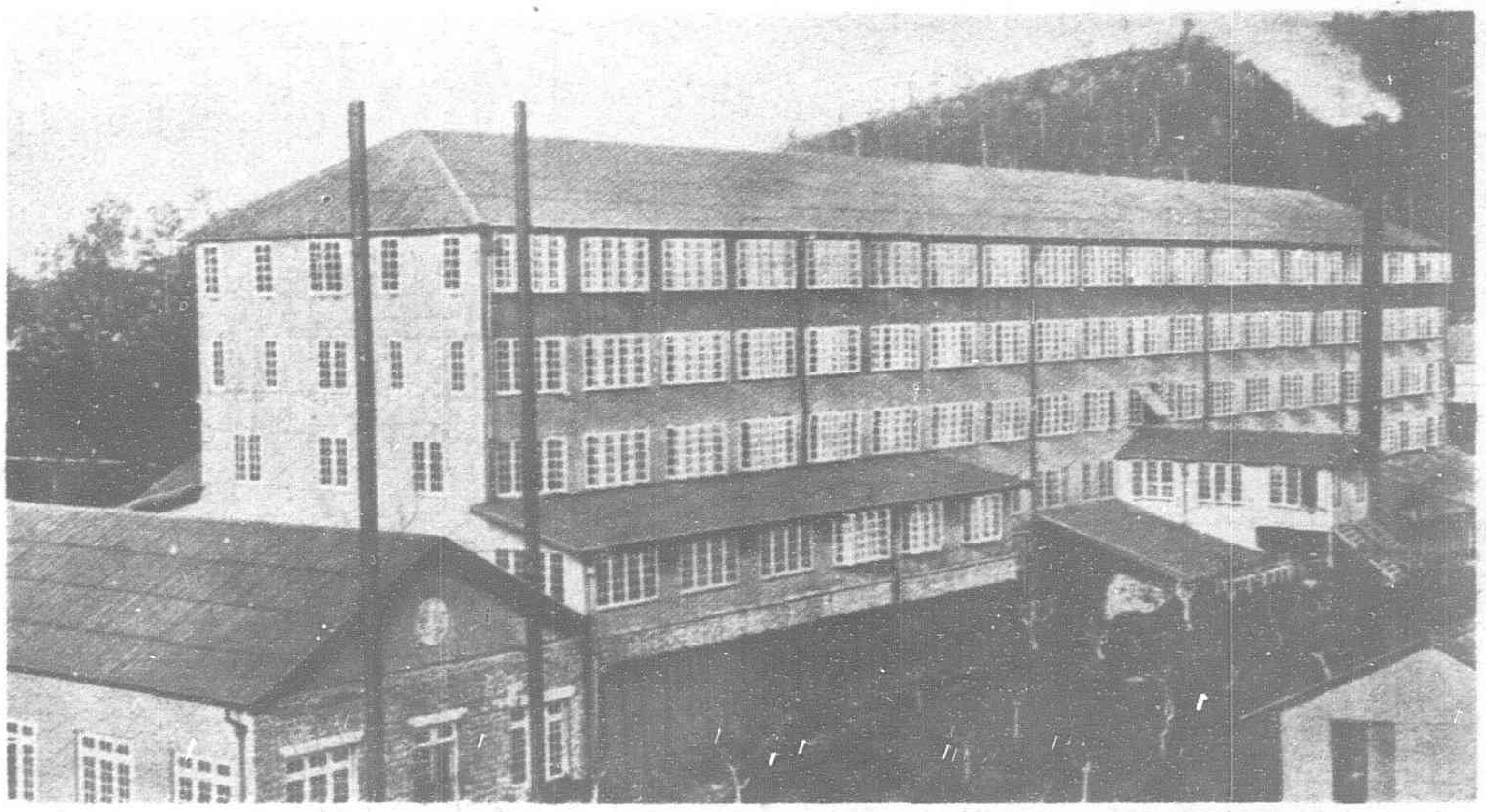
The accompanying illustration gives general details of the construction of the shed and the layout of the Sprinkler Installation. The Shed was fitted with one double bank of hessian tats in the center and two single banks, one at either side of the double bank. The sketch shows the position of the banks and the spaces between them.

The tat supports were wooden slats, instead of the steel construction now employed in modern factories.

Arrangements had been made to spread dry privet leaves over the tats, to imitate the conditions in service, but it was decided, after a brief discussion, that this would not be necessary as the tea leaves are spread so thinly that they can have little influence on the characteristics and behavior of any fire to which the tats may be exposed.

It should be noted that the interior of the shed, and the tats in it, had been thoroughly dried out before the test, by means of a fan which circulated air through an electric heater.

The Sprinkler Heads, as shown on the plan, had $\frac{1}{4}$-in. outlets. The actual running pressure during the test read on a gauge near the valve controlling the installation to the shed was 50 lbs. per square inch.



Poonagalla Tea Factory—the first in Ceylon to be protected by "Grinnell" Automatic Sprinklers

Details of the Test

The fire was started at the third layer from the bottom in the middle bank, at one end of the bank.

Both doors were open, and also four of the windows on the windward side of the shed were half open.

There was a fairly strong wind blowing at the time.

The fire was started by wetting a few inches of the third layer with a little petrol and applying a match.

At first the wind carried the flame towards the open doorway, but after a few seconds, when several layers in the middle bank had caught fire, the flames swirled round the end of the bank, and eventually, slightly charred the edges of the upper layers in the adjacent single bank. The uprights at the sides of the doorway also caught fire.

In 58 seconds the first Sprinkler opened, followed by others at short intervals. The shed was immediately filled with smoke and steam, which made observation of the progress of the fire difficult, but all flames visible before the head opened were immediately extinguished or greatly subdued.

By about four minutes from the opening of the first head, the fire was under control. The amount of water which had issued up to that time was about 500 gallons, as measured by a water meter in the supply pipe to the shed.

At this point, after a little discussion, it was decided to allow the Sprinkler Heads to extinguish the fire completely: it being agreed by all present that the remaining fire could be extinguished by hand in a few seconds, but that it would be of value to see how much water would be required to extinguish the fire without assistance.

At about 8½ minutes from the opening of the first head, only a slight spark was left, and in nine minutes 20 seconds from the opening of the head the water was turned off, all combustion being then completely extinguished.

The total amount of water used was 1,130 gallons, the average discharge thus being 121 gallons per minute.

On investigation 13 heads were found to have opened. The heads which did not open were at the windward side of the shed and were situated the furthest from the fire.

The amount of damage done was confined to approximately one half of the middle bank, all the layers, except the top layer, being burnt to about one half their area. The sketch indicates the extent of the damage.

The edges of some of the tats in the adjacent bank were charred, as already mentioned, but there can be no doubt that any incipient fire at the edges was immediately quenched by the first Sprinkler.

The wooden slats nearest the outbreak of fire were charred on the surface, but remained quite firm.

Conclusions Based on Test

The effective operation of the Sprinklers speaks for itself but three points call for further comment.

Firstly, promptness of action, an essential quality of a Sprinkler Head. The very fact that the Loft is usually only eight or nine feet high is an advantage, as the low ceiling brings the Sprinkler Heads close down on to the job, and assists that speed of operation which is so important in a tea "tat" fire.

Secondly, only 500 gallons of water were needed to control and confine the fire and 1,130 gallons finally and completely to extinguish it beyond all question of doubt. This serves to stress the point that provision of an adequate water supply is a simple matter for the average Tea Factory. A 10,000 gallons Reservoir on the hillside, with its base seventy feet above the peak of the factory roof, or alternatively, an Air Pressure Tank alongside the Factory, forms an ample supply.

Thirdly, the pressure of the water is an important factor. The task of the Sprinkler is to get the fire under control as quickly as possible and a good pressure ensures a maximum supply of water during those vital early minutes. It also follows that pressure beats the flames into subjection.

While it is true that much has been done in Ceylon to prevent any recurrence of the untoward events of the past six years, it is interesting to note that the Insurance Companies in the island recognize that the surest protection against disastrous fire is the Automatic Sprinkler System. Substantial rebates off fire and loss of profits premiums are offered to those Tea Companies installing Sprinklers. Some progressive Tea Companies have already availed themselves of this concession by installing complete "Grinnell" Sprinkler and Fire Alarm Systems.

How long will it be before the decrease in fire loss which will inevitably result in the protected Ceylon Factories, will induce the Insurance Companies who cover Tea Factories in North and South India, Java, Sumatra, and elsewhere to encourage their clients to adopt Sprinkler protection ?

The two sprinkler protected Factories illustrated—Poonagalla and Craighead—are amongst the largest and best-equipped modern factories in Ceylon. The far-sighted action of their owners should give a lead to many others who desire freedom from anxiety and who value uninterrupted continuity of trade.

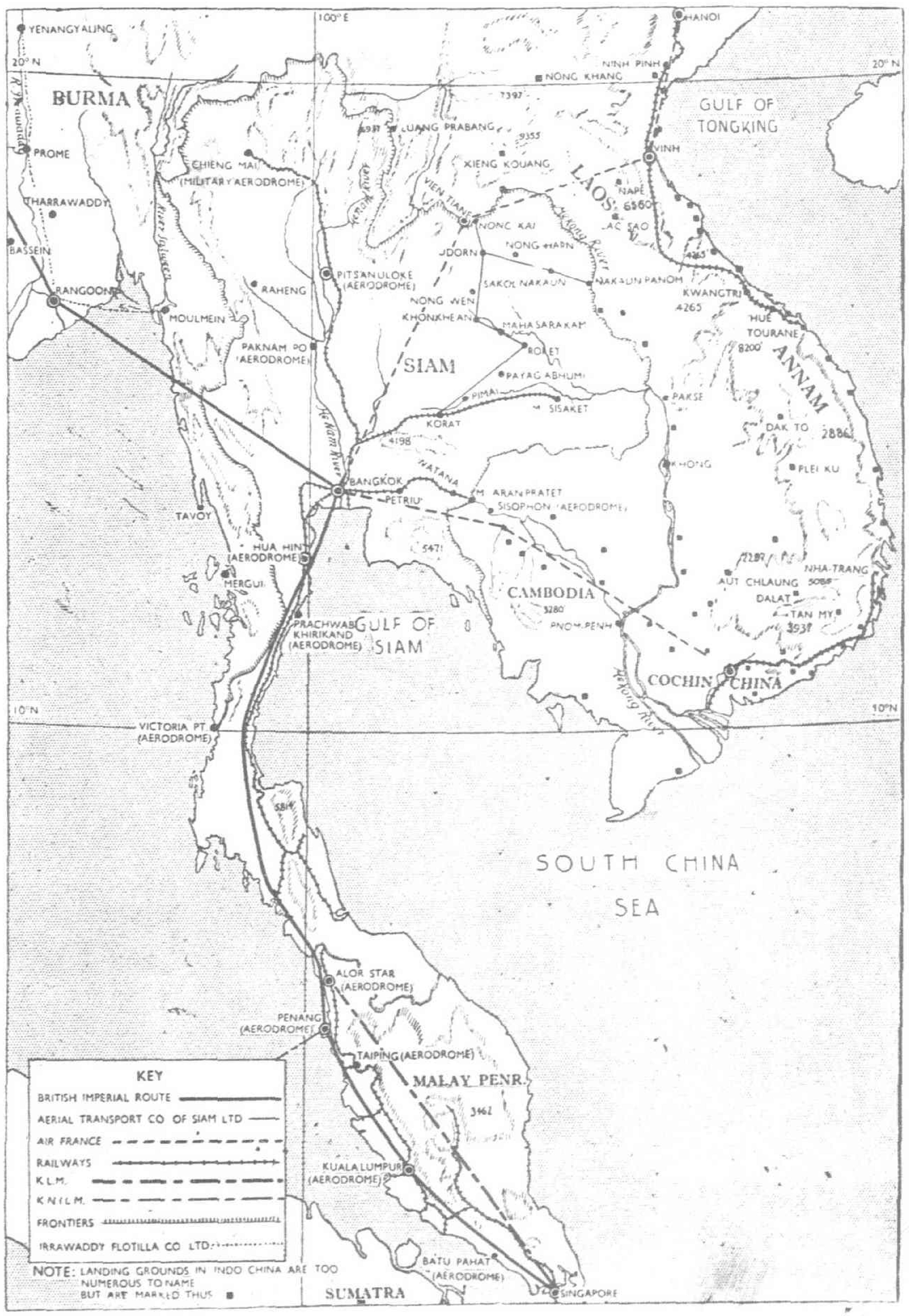
Iron Ore Near Khabarovsk

Six new areas containing iron ore were recently discovered in the Kimkansk region, near Khabarovsk. The deposits are estimated to total 170,000,000 tons and it is believed that they will serve as the main source of supply for the Khingansk metallurgical plant, soon to be erected in the Far Eastern region.

Deposits of iron ore were recently discovered at Kalmek-Asu in Kirghizia. Preliminary estimates place the amount of ore at from five to six million tons.

Air Mails in Siam*

The Aerial Transport Co. of Siam Ltd., Bangkok, reports that in 1934 the mail loads on the internal service (which this company has run without subsidy since August, 1931) have been steady at the 1933 level of about 470 lb. per week. But in the past few months much additional mileage has been flown, and from January 1, 1935, two new towns, Nong Kai and Mahasarakam, have been included in the schedule.



The Aerial Transport Co. of Siam Ltd. started in 1931 with four Puss Moths (Gipsy III). Mr. R. B. Jackson is the Managing Director. Traffic figures have hitherto covered the twelve months to March 31, but we are now given the return for the year to December 31, 1934. These figures follow :—

	Year ending 31-3-32	*Year ending 31-3-33*
Mail ..	20,619 lb.	26,251 lb.
Goods ..	2,505 lb.	5,499 lb.
Passengers	26	50
Miles flown	44,771	71,612

	Year ending 31-3-34	*Year ending 31-12-34*
Mail ..	23,340 lb.	24,485 lb.
Goods ..	4,595 lb.	5,854 lb.
Passengers	21	—
Miles flown	67,400	112,270

Here we may recall the fact that air-mail services were started in Siam by Mr. Otto Praeger, who had been lent by the United States Post Office to the Siamese Government to organize the Post Office generally. As Assistant Post-Master-General in the United States, he started in 1918 the first regular air-mail service in the World. That was flown between Chicago and New York in Army machines hired by the Post Office.

Nearly every town in Siam is known by two or three different names. Aeroplanes now leave Korat (also called Nakaun Rajsima) on the railway on Mondays and Thursdays, and return from up-country on Tuesdays and Fridays. The Monday service calls at Roi Et (or Roi Ech), Mahasarakam (or M. Kosum), Khonkhean (or Kaun Ken), Udorn (or B. Ma Keng, or even B. Dua Makeng) and Nong Kai on the River Mekong, and the machine returns to Udorn to stop the night. It flies back by the same route to Korat on Tuesday.

The Thursday service goes by Roi Et, Khonkhean Udorn, and branches off there to Sakol Nakaun (or Sakon Nakorn, or M. Sakon Lakon) and Nakaun Panom (or M. Panom). It returns Friday over the same route to Korat.

At all these stations there are aerodromes said to be serviceable all the year round, except that the aerodrome surface at Roi Et is sometimes soft between July and October, and Mahasarakam is only an emergency landing ground.

Udorn is a military aerodrome licensed for use by civil aircraft. There are aerodromes also at Pitsanuloke and at Paknam Po (or M. Nakaun Sawan). At Bangkok (Don Muang aerodrome) two concrete and asphalt cambered runways 600 m. by 60 m. have been laid down, and were appreciated by Sir Philip Sassoon during his visit in October.

The company states that the new radio stations and meteorological stations recently established at Korat and Udorn have been a great help to flying in the North East.

All the country between the Mekong River and Korat is low-lying. There is high land West of Bangkok and Paknam Po, North of Pitsanuloke and the frontier, and on the East side of French Indo-China. There is also a small range (to 4,198 feet) 80 miles North-east of Bangkok.

There were no forced landings in 1934 and all scheduled trips were completed. Mail for Roi Et had to be landed at Khonkhean on several occasions in the monsoon owing to flooding at Roi Et aerodrome. One machine, when on a regular flight between Roi Et and Korat, struck a vulture when flying at 3,000 feet. The bird was killed instantly, but the machine suffered only minor damage and the pilot was able to complete the journey without interruption.

No other incident involving any damage to the aeroplanes occurred during the year. Two machines were in regular use and one was held in reserve at Korat. The company is the refuelling agent for the Asiatic Petroleum Co., Ltd.

The accompanying map shows the railways and the company's air services, and includes the trans-Continental air lines. It also explains the route to be followed by the Air France extension to Hanoi.

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*The Aeroplane

Chinese Highways

In view of the increasing importance of communication facilities in the frontier provinces to the development of West China, plans are being considered by the Mongolian and Tibetan Affairs Commission for the construction of five highways with a total length of more than 5,700 *li* to link Sikong Province with Yunnan, Chinghai and Szechuen.

The projected highways are: (1) Yachow-Kangting Highway which will run from Yachow in Szechuen to Kangting, Capital of Sikong, about 530 *li* in length ; (2) Kangting-Paan Highway from Kangting to Paan, main city of Sikong, about 1,245 *li* ; (3) Paan-Taili Highway from Paan to Taili in Yunnan, about 800 *li* ; (4) Paan-Cheku Highway from Paan to Cheku in Chinghaifi 2,300 *li* ; and (5) Kangting-Chengtu Highway from Kangting to Chengtu, north of Siong, 900 *li*.

The China National Aviation Corporation*

Traffic figures of the China National Aviation Corporation, Shanghai, for January-June, 1934, show a continued recovery from the first half of 1933, when there was a 14½ per cent drop in the mail load total, caused by increase in the air-mail postage rates on February 1. The C.N.A.C. has been through a fairly hard time, and like many other companies seems about to see better days. In its first three years, to June 30, 1933, it made a loss of about £504,000, which is nearly as much as its capital of £645,000 (10,000,000 Mexican dollars).

The Chinese Ministry of Communications holds 55 per cent of the shares and Pan-American Airways the rest. The Directors are Chinese. Mr. E. K. Dai is Managing Director. The Operations Manager is Mr. E. M. Allison. Until recently all the pilots and chief technical men were Americans, but many Chinese have been trained as co-pilots; in fact the company is bound by agreement with the Chinese Government to employ Chinese personnel as soon as they can be trained.

The American interest in this country goes farther than having a share in Chinese internal airways. The aim is to have bases out there for future trans-Pacific development, and that is why they regard the Shanghai-Hongkong line as important. Pacific American Airways has operated this line under the C.N.A.C.

The other big foreign interest in Chinese air transport is the German interest in the Eurasia Aviation Corporation. This company's activities are complementary to, and not competitive with, those of the C.N.A.C. Its aim is an air connection between China and Europe, not the operation of internal routes.

The whole Chinese air-transport position has international reactions as well as national peculiarities. Regarding the latter a significant fact is that the Chinese Minister of Transport issued a strict official order forbidding either of these companies to carry non-paying passengers.

The Hankow-Chungking service is now run three times weekly. It was extended last June to Chengtu, and on this extension there are four services weekly. The company is planning a branch line from Chungking to Yunnan, which it may be ready to start within the next year.

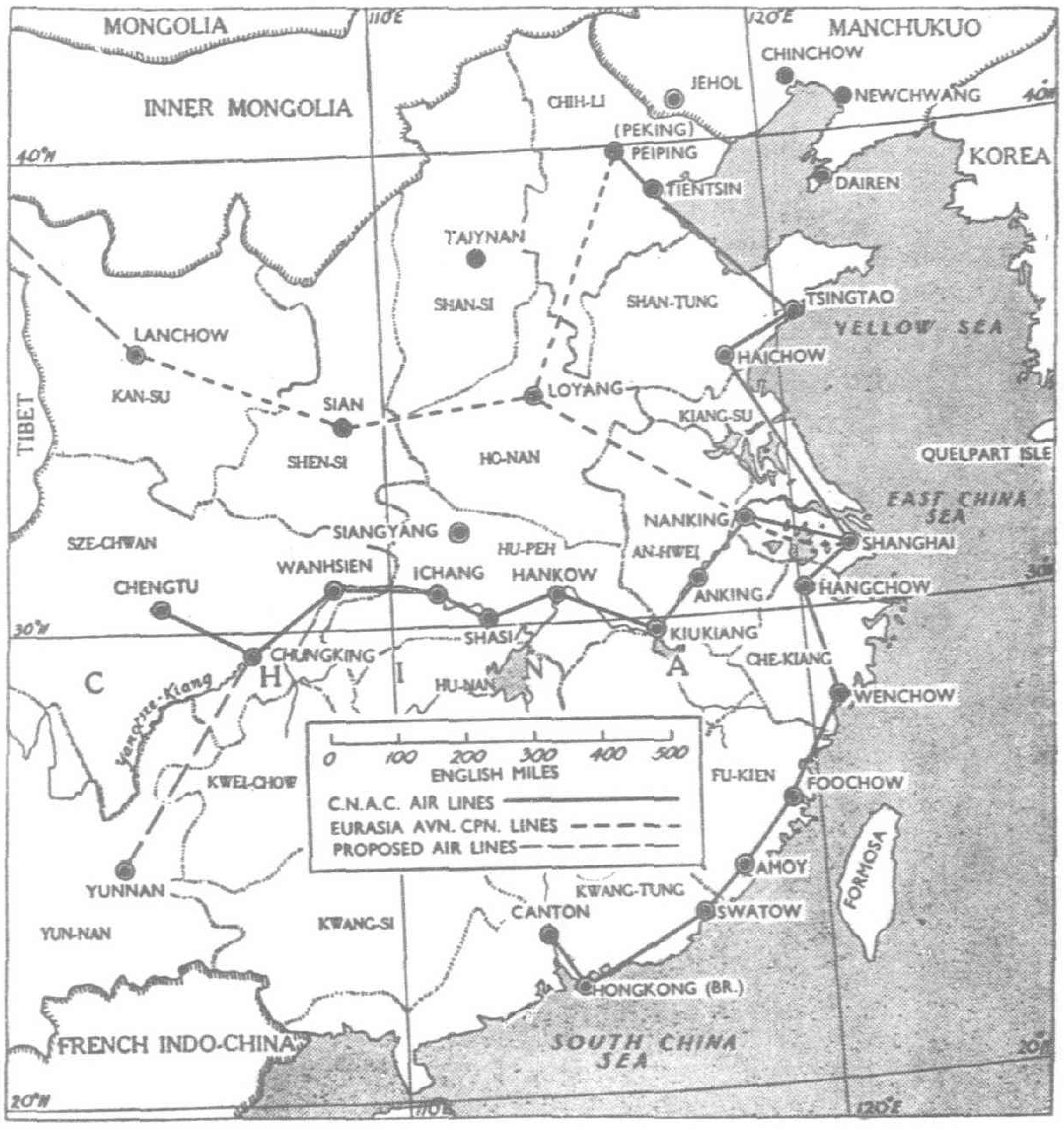
Seven Loening Amphibians (500 h.p. Pratt and Whitney Wasp), for four passengers, have been used, and the flight from Shanghai to Chungking can be made in two days, compared with three weeks by surface transport up the valley of the Yangtze. A single-motor Fairchild flying-boat is to be put on this route.

The Shanghai-Peiping service (thrice weekly) has been flown by Stinson land planes (250 h.p. Wright Whirlwinds) seating four passengers, but the company announces that on this route the Lockheed Electra twin-motor monoplane is to be used.

The coastal service from Shanghai to Canton was started in 1933. It has been flown with Sikorsky eight-passenger amphibians (two 500 h.p. Pratt and Whitney Wasps), which may shortly be replaced by Douglas RD-2 Dolphin amphibians.

In the six months, January-June, 1934, 1,905 passengers and 60,078 lb. of mail were carried on the Yangtze River route compared with 1,399 passengers and 53,843 lb. of mail in July-December, 1933. The loads amounted to 23.5 per cent of capacity compared with 21.78 per cent (July-December, 1933), and 19.22 per cent (January-June, 1933). Regularity this year has been 96.07 per cent on the Yangtze route; 265,978 miles have been flown against a schedule of 276,868 miles.

On the Shanghai-Peiping line, in January-June, 1934, there were 245 passengers and 4,194 lb. of mail against 323 passengers and 4,547 lb. of mail in July-December, 1933. This gives 18.5 per cent of load capacity against 16.9 per cent. Regularity on the Peiping line this year has been 98.7 per cent, with 122,400 miles flown against a schedule of 124,000 miles. Statistics of the Canton route for January-June, 1934, have not been given.



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* *The Aeroplane*

Dirigible Service Planned

A joint Japanese-Manchuokuo dirigible service connecting Tokyo and Hsinking, subsequently to be extended to Singapore and eventually to the United States, is to be inaugurated next spring by the National Aeronautic Policy Research Society, according to the *Asahi*. The company is to be known as the Pacific Airways Corporation, and will be capitalized at Y.20,000,000. At the start the company will use one Zeppelin of the LZ-129 type, but eventually expects to employ three at least, it was reported. The research organization began consideration of the plan last spring, when it was formed with Mr. Sukehide Kabayama as chairman of the board of directors, and Mr. Kumataro Honda, Mr. Keigi Ozaki, Mr. Mineo Kato, Mr. Masataka Ando and Baron Seijun Inouye as members.

The *Asahi* said the project resulted from an exchange of opinion between Government officials and aviation authorities. Arrangements already have been made for subscription of three-fourths of the capital, and the original Zeppelin soon is to be purchased at a cost of Y.6,000,000. Even now, the *Asahi* said, an engineer of the Zeppelin Company, personal representative of the famous Dr. Hugo Eckener, is on his way to Japan by way of Siberia to negotiate the sale of the first big dirigible. He is expected to arrive November 20.

The initial service, between Tokyo and Hsinking, will be non-stop. The *Asahi's* account did not mention the South Sea islands, but *Rengo's* report said the eventual possible extension from Singapore to the United States would be by way of the Mandated Islands and Hawaii.

The LZ-129 type has twice the capacity of the Graf Zeppelin which visited Japan several years ago, and can carry five light airplanes.

New Passenger and Cargo Motorship "Jutlandia" Goes Into Service in the Far East

On Saturday the 10th of November, 1934, the passenger and cargo motorship *Jutlandia* left the builders' (Messrs. Nakskov Skibsværft Ltd.) yard to proceed to Copenhagen and arrived there on Sunday morning the 11th of November after having carried out the official trials in the sound north of Copenhagen, where a speed of 17.1 knots was attained; the contracted speed is 15 knots with loaded ship.

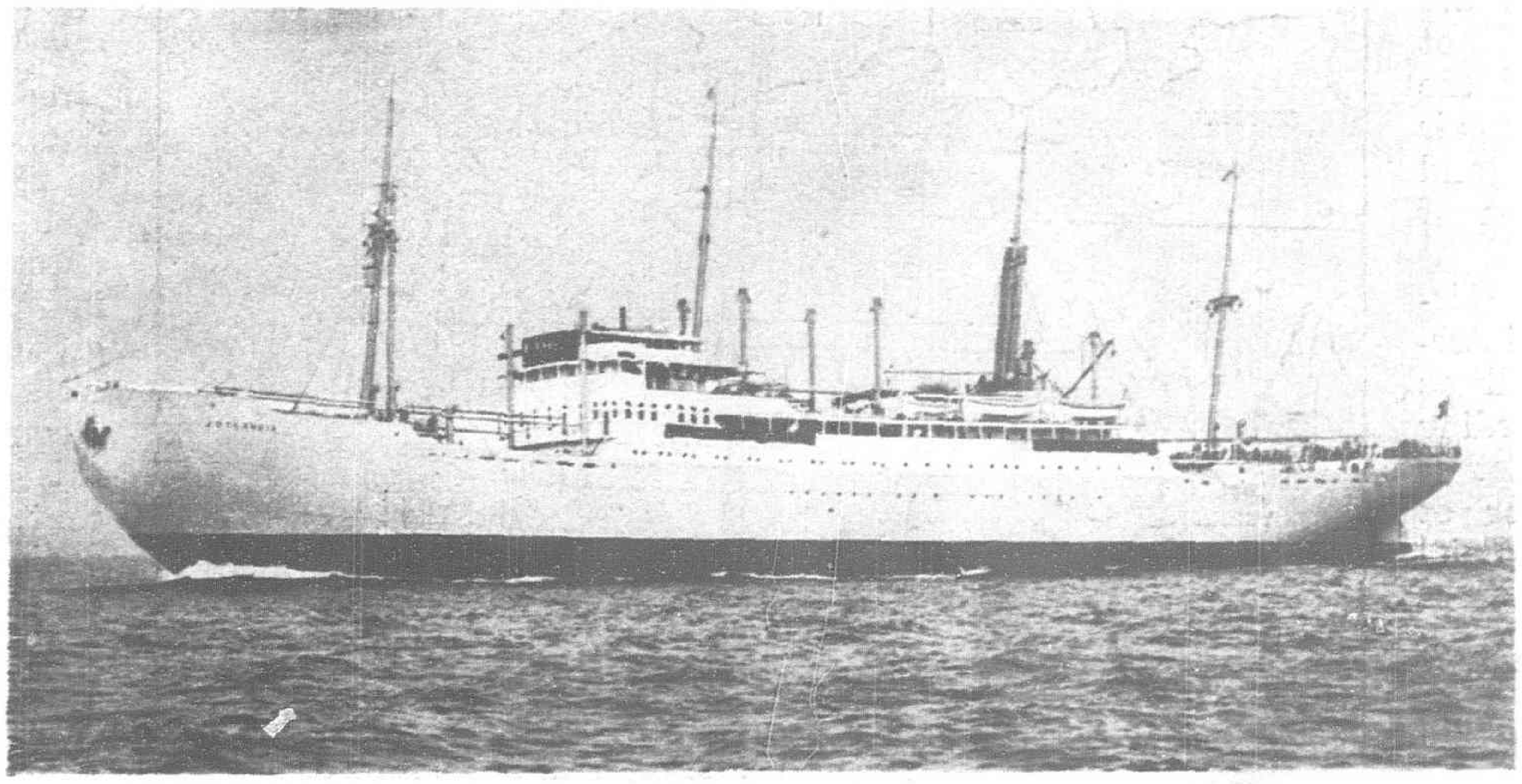
The vessel, which is built to the order of Messrs. The East Asiatic Company, Ltd. and in conformity with the owners' special requirements for vessels engaged on their regular route to Bangkok, embodies in many ways considerable improvements in comparison with the vessels previously built by the same builders for this trade, and special attention and care has been given to arrange this new vessel as practical and comfortable as possible for the passengers on board. The crew's quarters and mess-rooms are all very spacious and light.

As will be seen from the following description all passengers are offered a comfort which considerably exceeds the conditions prevailing on the large mail-boats trading on the same routes.

The vessel which is built to the highest class of Lloyd's Register of Shipping (+100 A.I.) has the following principal dimensions:

Length over all	461-ft. 0-in.
Breadth moulded	61-ft. 0-in.
Depth to upper deck	36-ft. 0-in.
Gross tonnage	8,457 tons
Nett tonnage	5,204 ,,

The ship is furnished with the number of watertight bulkheads stipulated by the convention, which secures the floodability of the ship. The m.s. *Jutlandia* is the first ship that has been built to The East Asiatic Company with Maier-Form. The propelling machinery, which consists of two five cylinder two-stroke diesel-motors of Messrs. Burmeister & Wain's make, develops normally 8,000 i.h.p. The auxiliary machinery comprises three cylinder two-stroke diesel-motors supplied by Messrs. Burmeister & Wain.



Motorship "Jutlandia"

The ship is built with two complete steel decks, and further a tween deck is arranged for in the Nos. 1, 2, and 3 holds. The holds are served by five exceptionally large hatchways, and they have a cubic capacity of 539,570 cubic feet. The ship is equipped with 16 cargo derricks and 16 electrically driven winches made by the well-known winch maker Mr. Thomas B. Thrige of Odense.

The steering engine, which has been supplied by Mr. Thomas B. Thrige, is of this firm's completely electrical type. The windlass is likewise electrically driven and supplied by Mr. Thomas B. Thrige.

The accommodation for the passengers consists of altogether 25 double and nine single staterooms. All the staterooms are very large and airy and furnished with broad and comfortable beds, wardrobes, toilet—and writing tables, etc. All the double staterooms have their own adjoining toilet and bathroom very completely equipped in every respect. This is a special feature for the passenger-ships owned by Messrs. The East Asiatic Company, Ltd.

Forward in the bridge a large dining-saloon is situated, which amply accommodates 70 persons placed at small tables. The saloon is furnished with chairs and tables in dark polished birchwood of the very highest quality, whilst the bulkheads are kept in beautiful light colors. It is with its many windows and domed ceiling a light and festival room. The saloon is lighted by indirect light and bulkhead-lamps. Above the large open fire-place a painting of the Amalienborg Palace, painted by Mr. Aksel Johansen, is placed.

The ship is furnished with fire-proof bulkheads and a modern carbonic acid fire-extinguishing plant with pipe-system belonging thereto, which automatically shows any formation of smoke, even if ever so slight, in every room of the ship. Likewise are all staircases in the accommodation made of steel and brass owing to the risk of fire. Steel structure is used to the greatest possible extent everywhere in the accommodation in order to meet the risk of fire.

Above the staircase the smoking-saloon is situated on the forepart of the promenade deck, whilst the ladies' saloon and the bar-room are placed just abaft. The smoking-saloon is carried out in dead polished Caucasian walnut with Macassar ebony panelling. With its large English fire-place, numerous armchairs, smoking-tables, card-tables, writing-tables, reading-lamps, etc., this room will give the passengers an impression of comfort and a homely feeling. Above the fire-place is a painting of the Frederiksborg Palace, painted by Mr. Aksel Johansen.

The ladies' saloon is carried out with light painted bulkheads with polished walnut panelling, and likewise the furniture is made of walnut. There are as well indirect ceiling-lighting as bracketlamps on the bulkheads. The bar-room is in a marked modern style with creamcolored bulkheads and dead colored windows. The bar itself is of Macassar ebony with a black counter.

For the entertainment of the passengers there are installed broadcasting-loudspeakers in connection with gramophones in the three saloons, and likewise there is a portable loud-speaker on the promenade deck. The furniture in the smoking-saloon, the ladies' saloon, and the bar-room has been supplied by Messrs. Lysberg, Hansen & Therp of Copenhagen.

A living-room and dining-room for the passengers' children is arranged in the corridor leading to the dining-saloon. The room is carried out as a modern English nursery and decorated by Miss Ragnhild Berg.

All cabins and saloons are ventilated and heated by warm and cold air being blown in, with the result that the usual electrical fans and radiators are avoided. The ventilating system is carried out in co-operation with Messrs. De Forenede Jernstoberier. Everywhere in cabins and saloons the flooring used is noise-reducing rubber covering, supplied by Messrs. Bridana Ltd. of Copenhagen, and English Ruboleum.

The ship is furnished with an electric kitchen-range and oven besides the other electric galley equipment, supplied by Messrs. Vesta Ltd. of Copenhagen; and there are very roomy cooling chambers with refrigerating machines for the provisions, etc. (The refrigerating machinery is supplied by Messrs. Thomas Ths. Sabroe & Co. of Aarhus). The pantry and the bar-room are equipped with large electric frigidaire cabinets of "Evercold's" make. On board there is a modern water softening plant as well for drinking water as for washing water. On the forward deck a swimming-basin is arranged for the passengers.

In the after deckhouse a laundry with washing machines, drying machines, calender, and ironing machines is installed, all arranged for electric drive (supplied by Mr. Georg E. Mathiesen of Copenhagen).

The life-saving equipment is of the most modern kind, and the life-boats are placed under Columbus davits of latest type. The ship is furnished with a powerful wireless station and a wireless sounding apparatus, supplied by Messrs. Electromekano Ltd. of Copenhagen.

The building of the ship was commenced at the beginning of the year, and the launching took place on the 11th of August.

After the trial trip the ship was taken over by Messrs. The East Asiatic Company, Ltd., and it enters into their fleet as one of their fastest and most comfortable ships.

Diesel Lorries for Bangkok

Firms and individuals engaged in the transport business in Bangkok and Siam may be interested in the following details of the Diesel lorries which are being imported into Bangkok. This is taken from *Motor Transport* :—

The Magirus Company, of Ulm, in Germany, well known as manufacturers of fire-fighting machines, is also a large maker of goods transport vehicles as well as 'buses and coaches. For a long time Magirus appeared to stand aloof from oil engine developments, but, as is evinced now by the production of two C. I. engines of the very size most wanted, the company has not been inactive. It is well advanced in the production of a four-cylinder and a six-cylinder engine, with ante-chambers standing on one side of the cylinder heads in a similar manner to Deutz.

In the performance diagram of the four-cylinder engine the power curve goes straight up from 700 to 1,600 r.p.m. rising directly proportionately with the speed from 15 to 38 b.h.p. From 1,600 r.p.m. it continues as a curve, reaching maximum of slightly over 46 b.h.p. at 2,250 r.p.m. Within the main speed range the engine should be particularly smooth and flexible, and the torque is very uniform, rising from 116 lb.-ft. at 800 r.p.m. to 123 lb.-ft. between 1,300 and 1,800 r.p.m., and declining to 180 lb.-ft. at 2,200 r.p.m. From 27 to 43 b.h.p. output the engine consumes about 0.44 lb. fuel per b.h.p. hour. Even at top speed and full load the four-cyclinder engine's consumption does not rise above 0.5 lb. per b.h.p. hour. The dry engine weighs, complete with fly wheel and components, 727 lb., or slightly more than 16 lb. per b.h.p.

The six-cylinder engine produces 28 b.h.p. at 800 r.p.m., 51 b.h.p. at 1,400 r.p.m., and 65 b.h.p. at 2,000 r.p.m., which is the speed set by the governor fitted on the Bosch pump. The power curve is thus almost straight. The torque curve falls from 188 lb.-ft. at 800 r.p.m. to 170 lb.-ft. at 2,000 r.p.m. Fuel consumption varies between 0.5 and 0.52 lb. per b.h.p. hour. It falls to 0.49 lb. between 1,200 and 1,600 r.p.m., when 43 and 56 b.h.p. are developed respectively. The engine weighs approximately 968 lb., or not quite 15 lb. per b.h.p.

Both engines are reported to work very smoothly and quietly without visible exhaust even at very low speeds and when accelerating.

Magirus lorries are due to arrive in Bangkok in the very near future, imported by Oriental Machinery Stores, of Worachakr road.

Motorship for Siam

On Wednesday, the 23rd of January, 1935, at half past eleven a.m., Messrs. Nakskov Skibsværft's new-building No. 65, the motorship *Pakpanang*, built to the order of Messrs. The Siam Steam Navigation Co., Ltd., of Bangkok, was launched.

The ship has the following principal dimensions :

Length b.p.	140-ft. 0-in.
Breadth moulded ..	26-ft. 6-in.
Depth to main deck	9-ft. 0-in.
Carrying capacity ..	240 tons d.w.

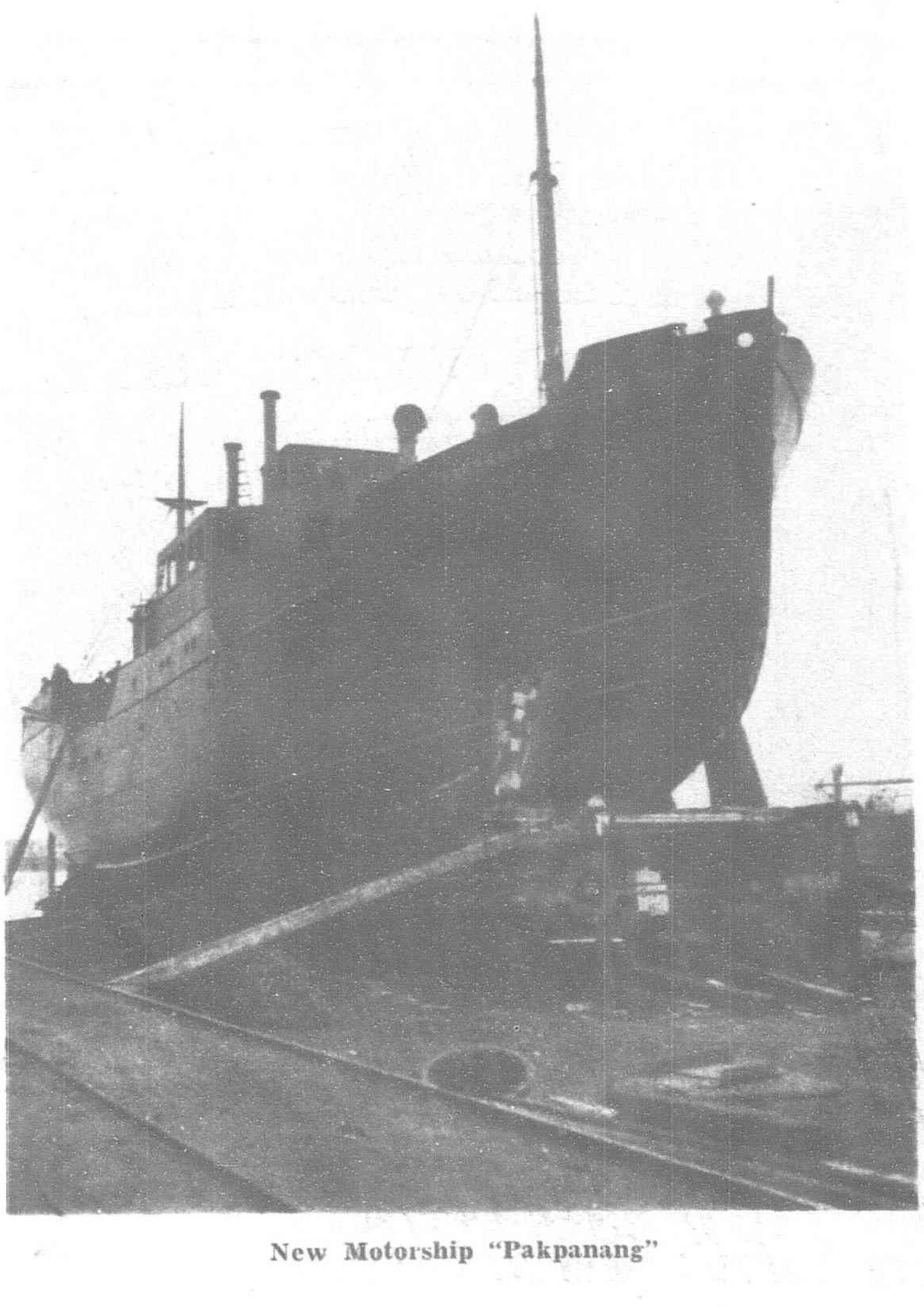
The ship is built to British Lloyd's highest class, with forecastle, open bridge, raised after deck, and with deck houses amidship and aft.

It is equipped with two hatches and two masts, three derrickposts of one ton carrying capacity and three motor winches for 1.3 tons. The steering gear is a hydraulic hand gear.

The ship is intended for trade on the Gulf of Siam, and accommodation for eight cabin passengers as well as a large number of deck passengers is provided for.

The machinery consists of two 2-cylinder, 2-stroke cycle Diesel motors of 600 i.h.p. in total, which gives the ship a speed of 11 knots in loaded condition.

After the launching, which was quite successful, the ship was moored at the yard's equipping wharf in order to have the machinery installed and the equipment completed.



New Motorship "Pakpanang"

With this ship The Nakskov Shipyard has built five ships for Messrs. The Siam Steam Navigation Co., Ltd., viz : s.s. *Nibha*, m.s. *Malini*, m.s. *Bhanurangsi*, m.s. *Muinam*, and the above one.

New Japanese Liners

Competition among shipping operating on the Europe-Far East routes is likely to be intensified by the decision of the Nippon Yusen Kaisha Company to build three new semi-cargo boats of 12,000 tons each, with a crusing speed of not less than 16 knots.

They are to be used for mixed passenger and freight traffic between Japan and European ports.

The Nippon Yusen Kaisha at present runs six liners, of which three are old and slow. By replacing these with new, fast boats, the company will reduce the time taken for the passage from Kobe to London from 46 to 36 days.

The decision has been taken mainly on the ground that Germany is shortly to put several fast boats on the Far Eastern route, when the older Japanese vessels would be hopelessly outpaced.

Engineering Notes

INDUSTRIAL

MIN WATERWORKS.—The site for the projected Nanchang Waterworks and Electricity Plant has been fixed after careful surveys by representatives of the Kiangsi Provincial Government and the China Development Finance Corporation. The site will be in the vicinity of the Min Sheng Factory, where adequate water supply is available.—*Kuo Min.*

STEEL FOUNDRY FOR CANTON.—Negotiations for the erection of a steel foundry, costing $13,000,000, at Canton, are proceeding between the Kwantung Government and an American machinery firm. The Canton authorities, it is understood, have offered to make an immediate payment of $3,000,000, the remainder to be settled in ten yearly payments of $1,000,000.

MANCHUOKUO DEVELOPMENTS.—The floating of five new companies with a total capital equivalent to £3,500,000 is part of a far-reaching plan of economic development which the South Manchuria Railway Company proposes to carry out during the coming financial year. The projected companies are as follows :—(1) The Manchuria Gold Mining Company, with a capital of £700,000, subscribed exclusively by Manchuokuo, the S.M.R. Company, and the Oriental Development Company. (2) The Manchuria Collieries Company, with a capital of £700,000, subscribed by Manchuokuo and the S.M.R. Company. (3) A bean mill in Dairen for the purpose of extracting oil from soya beans, with a capital of £58,350. (4) A motor-car assembling plant in Mukden, to cost nearly £300,000. (5) An aluminium factory, with a capital of £1,750,000. This project is regarded as the most important of them all.

NEW STEEL PLANT.—Designs for a new metallurgical plant, to be erected in the Khingan-Bureisk district of the Far Eastern region, have been completed. The plant will produce 450,000 tons of pig iron, 500,000 tons of steel and 400,000 tons of rolled metal annually. Surveying work has already begun on the construction site.

RAILWAYS

BRITISH ROLLING STOCK.—The petition of the Tientsin-Pukow Railway Administration to purchase 18 locomotives and 15 passenger coaches and freight wagons, in order to expand business and speed up traffic has been granted by the Ministry of Railways. The cars will be ordered from Britain with funds provided from the British Boxer Indemnity Refund.

STEEL MATERIAL FOR CHINA.—Orders for 33,300 tons of rails, dog-spikes and fishplates for the Canton-Hankow Railway, to the total value of over £250,000 sterling, have been divided among the following works :—Barrow Haematite Steel Co., Ltd. ; the British (Guest Keen Baldwins) Iron & Steel Co., Ltd. ; the Cargo Fleet Iron Co., Ltd. ; Colvilles, Ltd. ; Dorman, Long & Co., Ltd. ; the Lancashire Steel Corporation, Ltd. ; the Skinningrove Iron Co., Ltd. ; the United Steel Companies, Ltd. ; Guest, Keen & Nettlefolds, Ltd.; Walker & Wilson, Ltd., and the Anderston Foundry Co., Ltd. Orders for about 20 locomotives and a considerable quantity of rolling stock are under consideration and will be placed in the near future. The contracts are being distributed by the Chinese Purchasing Commission, which is responsible for the spending of about £3,000,000 of the British Boxer indemnity on the purchase of railway and engineering material in Great Britain. —*Ironmonger.*

MANCHU RAIL ORDER.—The mission sent to Japan and Manchuokuo by the Federation of British Industries has secured orders for rails and railway equipment to a value of £8,000,000 from the new state, according to an announcement. The orders will be financed by Messrs. Seligman Bros., Ltd., on 20 year credits. Sir Charles Seligman, one of the members of the mission, is a director of Seligman Bros.—*Reuter.*

MINING

COAL DEPOSITS.—New coal deposits were recently discovered in the center of the Kuznetz coal basin, which has the largest coal resources of any region in the Soviet Union. The new deposits are estimated to contain about 350 million tons of coal. Veins of twelve meters have been uncovered.

IRON ORE NEAR KURSK.—During the current year several new iron ore deposits have been discovered in the neighborhood of the Kursk magnetic anomaly. In the Novo-Oskol region veins of 18 meters in thickness were found ; in the Lebedev region—of 54 meters thickness. The deposits of the latter district are estimated to contain about 250 million tons of ore.

GOLD IN JAPAN.—Japanese investigators have just been able to report the discovery of considerable deposits of gold and silver in the Kumano National Park district in Wakayama Prefecture, according to a *Rengo* report from Osaka. The experts were sent by the Osaka Mining Supervisory Bureau. Gold deposits in the beds of the Kumano and Kitayama Rivers have already been investigated and found to be particularly rich in gold ore.

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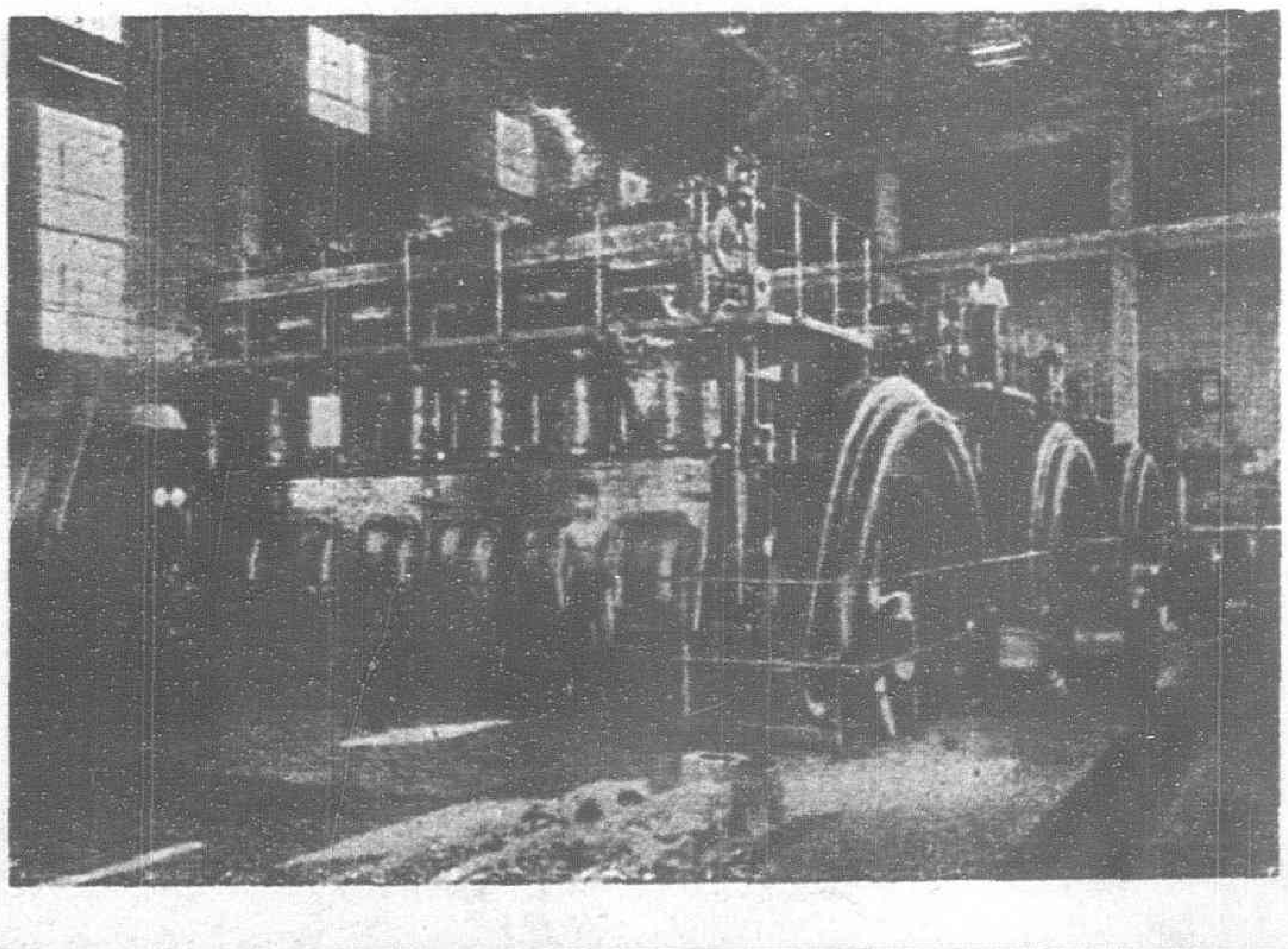

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